

# E-Counseling to Help Maintain Good Mental Health in Organizations

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Counseling is not common in India even though it helps us in various ways. The COVID-19 pandemic itself has created a lot of problems related to mental health. Bad mental health severely affects society. Even then, hardly very few people go for counseling. There are various reasons why people don't go for counseling. Some people believe in myths regarding counseling while most of the people don't even know what exactly counseling is. Therefore, it was necessary to find a way to let people know about counseling as well as allow them to go for counseling. Our web-application is designed so as to provide solutions to these problems. The system proposed in this paper is a web-application designed to help the overwhelmed, burned out, unhappy or anxious students or employees of an organization. The main objective of the web-application is to help the user in maintaining good mental health. The users will be having access to various features. Users can set up appointments with the organization's counselor. Technology such as WebRTC is used for video conferencing so that the user can connect with the counselor on their own space and anytime they want. Users will have to answer some questions as part of the survey which will determine how much the user is in need of counseling. The 'quotes' section will help inspire the users with some inspirational quotes from famous personalities. The blogs section of the web-application will help impart knowledge about e-therapy and its advantages to the users. The users who are not familiar with e-therapy can get introduced to it by watching the informative videos provided in the videos section. The base of the application is MERN stack because of which we got to explore many web based technologies efficiently.

**Keywords:** Mental health, Web application, E-therapy, React, MongoDB, Counselling, E-counseling.

## **1 Introduction**

Maintaining good mental health is a serious concern now-a-days. The fact has been pressed upon again because of the ongoing COVID-19 pandemic. Many students have lost their touch with society because of the strict protocols which has led to some serious health and mental touch. Counseling or going for e-therapy is necessary to help maintain good mental health in such cases.

In a country like India, going for counseling or meeting up with a therapist is not very common. Maximum number of people still don't know how helpful counseling is or what exactly counseling is.

There are a lot of myths regarding counseling that are not true. This scenario gives rise to several questions. Would there be a change if e-therapy or virtual counseling are promoted properly? Would virtual counseling be able to remove the barrier that traditional methods could not? The purpose of our web-application is to find the answers to these questions.

We wanted to create a web application that would help our society in various ways. We found out that our country does not give much attention to the mental health of a person.

Owing to the current scenario, both students as well as employees are facing severe mental health problems. Because of social distancing, protocols and safety precautions people are unable to schedule an appointment with their therapist or undergo a therapy session. So, the idea of the web-application emerged through this. E-therapy will be helpful for the employees or students to maintain good mental health.

Currently one of the existing systems is an application named Sanvello: Anxiety & Depression. It provides the users with few features that include therapy, coaching, tracking of goals and mood, etc. There are several other applications that are similar to this application.

The advantages of these applications saves a lot of time as the users can go for a therapy or coaching session whenever they want. The application is customizable according to the user's need. However, one of the main drawbacks of these applications is that most of them are available mostly in the US only. It's not cost effective and has less features.

In the proposed system, whenever necessary the user can fix an appointment with the counselor and then can have the session online. However, there will still be people who are not comfortable with counseling or do not know what exactly counseling is. Therefore, blogs and educational videos related to counseling are made available on the web application so as to spread awareness regarding e-therapy.

Users of the web application are supposed to answer some questions before opting for a counseling session for the first time. This information is then sent to the counselor.

Our web-application focuses on the counselor's side too. The counselor can manage his/her schedule based on the number of sessions requested by the students.

The objectives of our web-application include promoting counseling, letting people know how important maintaining mental health is, explain how counseling works to the users who do not understand its process, help the users in maintaining good mental health.

The project's scope revolves around the mental health of the individuals in the organization. The main motive of the project is to promote e-counseling and how important it is to maintain good mental health. It allows the users to keep track of their mental health with one-to-one live counseling. The application has the questionnaire which lets the user know how much they are need of the counseling. The application has different space which provides motivational quotes, video, and blog.

The application of this project is that this web application can be made available in various workspace, education institutes and government sectors. This will help in the betterment of the workspace people and enhance the commitment of the users towards the organization.

## **2 Literature review**

Ifeanyichukwu Anthony et. al. [1] has proved through a survey how the maximum number of people are willing to go for e-therapy. For this survey, members of the general Nigerian population were recruited from social media as participants. Among hundred participants, a total of eighty-eight participants show their interest in utilizing e-therapy services in Nigeria. Their willingness was driven by factors such as their experiences during the coronavirus disease 2019 pandemic, perceived comfort in pouring out one's heart to a therapist that is guaranteed in e-therapy, and curiosity to explore what e-therapy actually means. On the other hand, nine participants were unwilling, and their unwillingness was mostly driven by the perception that the Nigerian environment was disabling for e-therapy. While three participants were neutral about their willingness.

While our web-application deals with e-therapy, it was necessary for us to know how widely it can be developed so that it can widen its scope in the future. Vadapalli, Hima B.[2] have done a case study on evaluating a person's emotion. We know that Emotional intelligence finds its applications in various fields, and many researchers are currently looking to explore the possibility for computers to demonstrate this intelligence. Interactions between humans and computers can be improvised especially in the era of a digitized society by examining human facial expressions and also by observing the subject to the activities they carry out at certain times. Facial expressions are one of the common non-verbal visual cues used by humans in communicating emotions. This case study explores the development of a tool that can facilitate the evaluation of a person's emotion using their facial expression during an e-therapy session. Further to evaluating facial expressions, there is a medium provided to estimate the expressions and generate feedback that can be used by the therapist.

In today's generation depression is the most common mental health disorder which is mainly affecting many people's lifestyles especially the youth generation. It is reported that these applications lack proper evidence of improvements. This is an important concern for the therapist and the users in order to monitor the therapy progress. Huda, Miftachul et. al. [3] has used Feed – forward neural network model and Depression scale to measure the depression level can be used to predict depression in this proposed solution.

Now, the idea of limiting our web-application to a specific organization came through this. Cyber counseling or e-therapy has widely been adopted as the new approach to give insightful guidance into the clients. Unlike traditional methods, this study about e-therapy will be using mobile application design to present the approach. This paper by Vimalaswaran et. al. [4] is expected to contribute in enabling the process of academic counseling through the context of higher education and so on.

Matthew Russell Bennion et. al. [5] has documented the quality of web and mobile applications used for stress and anxiety by examining the way in which they were developed. The paper concludes that to build a safe and effective application it is necessary to apply clinical as well as academic best practices.

Traditional methods have their own advantages compared to virtual counseling. We had some concerns regarding e-therapy. This paper by Emma Broglia et. al. [6] helped solve a lot of our queries. In some universities, the growing student population has made it difficult for the counselors to provide quality services. Hence, this paper explores how a mobile well-being application has helped students achieve an acceptable treatment along with face-to-face counseling.

As anxiety, stress can lead to severe problems in our day-to-day life, this proposed system will help detect depression. Shailender Kumar et. al [7] describes how the facial features of students are extracted from the video footage using the KLT algorithm used for face detection. The Gabor filters are used to identify the symptoms. Finally, the SVM classifier classifies the person.

Wong, Kah P et al.[8] in their paper "Preferences for Online and/or Face-to-Face Counseling among University Students in Malaysia" have explored the preferences of students in terms of online or face-to-face counseling. According to their survey, 35% of the students want to go for online counseling while

the rest would go for face-to-face counseling. From this paper, it can be concluded that addition of online counseling along with face-to-face counseling can help increase the utilization of counseling services.

Sandel, Luningning [9] has provided a detailed explanation about online therapy. It discusses the advantages and disadvantages of online therapy, its best practices, its limitations, and how it works. The paper concludes that online therapy is effective.

No matter how effective e-counseling is, it always has some drawbacks compared to the traditional method. Although, Rosanna Wells [10] have highlighted the benefits of virtual counseling, he has also concluded that online counseling should not be substituted for traditional counseling.

To completely understand a topic, it is necessary to know its evolution since its origin. Terry Hanley [11] has discussed the history of online counseling. It is also discussed how the pandemic has acted as a catalyst for online counseling.

The COVID-19 pandemic has resulted in the increased usage of online counseling. Many people even got introduced to the concept of counseling during these difficult times. Dominikus David Biondi Situmorang [12] has highlighted how online counseling services have evolved.

### 3 Methodology

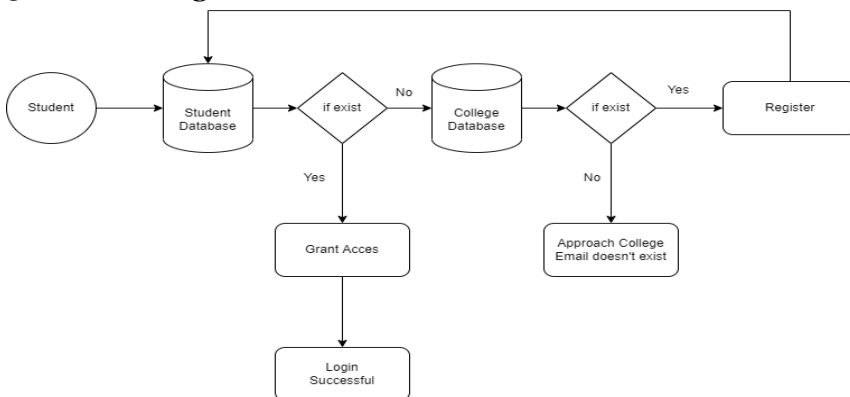
Several surveys indicated that a large number of people are willing to go for e-therapy services.

We researched a lot on how we can add features to the web application so that even people who are unwilling to go for e-therapy services might find the application beneficial. Upon researching several papers and going through some existing systems we added some extra features. The features include blogs, inspirational quotes, videos. These features will help the students and employees in various ways to maintain good mental health.

The tasks were then divided based on our specialization. The basic application took a few weeks to build. Features were added later in the application. Simultaneously, research was also being done to stay updated with the latest trends so that we can add some new features.

Since the subject area is complex, we had several meetings with our college counselor. Some of the features that we have added in our web-application is because of the suggestions we received from the counselor. A user has to answer some questions when he/she logs in for the first time. The questions that the user answers are also verified by the counselor.

#### 3.1 Student Login



**Figure 1.** Student Login Architecture

For login to the application, user email needs to be first registered by the college in their database and using that only that email, user can register on the portal, then create his/her profile and can login. The benefit of this is that an integrity would be maintained, student portal space would be limited within his/her organization. For implementation, we have used the JWT verification method for authentication and authorization.

### 3.2 Student Questionnaire

A questionnaire is one of the unique modules our application is offering. Here we have developed an algorithm where on the basis of how a user is reacting to questions by choosing different answers and every answer has its own value according to the question it calculates and suggests how much a user is in need of counseling.

### 3.3 Live Counseling (Student)

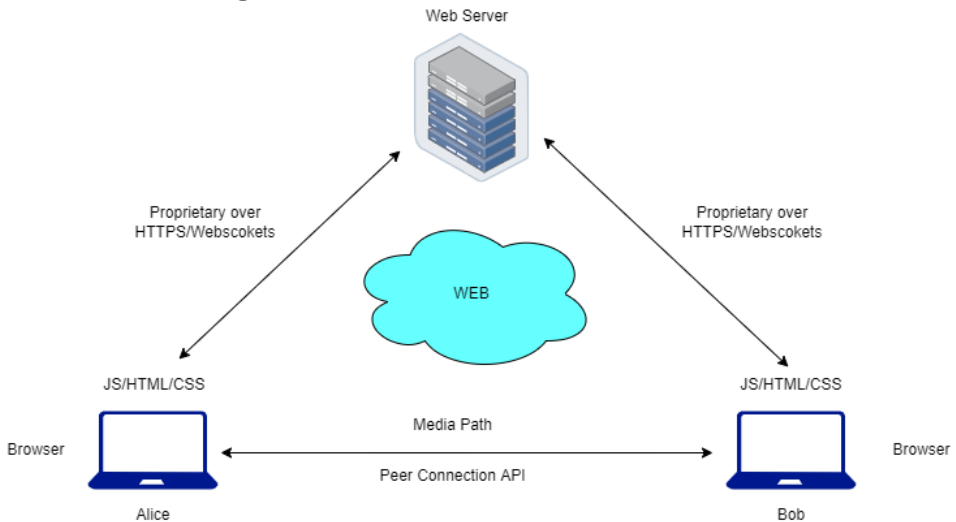


Figure 2. WebRtc Architecture

For live counseling we have implemented the WebRtc module which is free and open-source. WebRTC has a wide range of uses, from simple online apps that use the camera or microphone to more complicated video-calling and screen-sharing applications. Users can join from any place and from any system of their comfort. It sends data like audio and video in real time across browsers - P2P. NAT traversal mechanisms are used by browsers to reach each other and a peer to peer connection is established.

### 3.4 Scheduling Online Appointments

Initially student requests for the appointment which sends an API request to the counselor with their profile. Counselor accepts the request and schedules the appointment which gets reflected to the student dashboard in real time.

### 3.5 Counselor Login

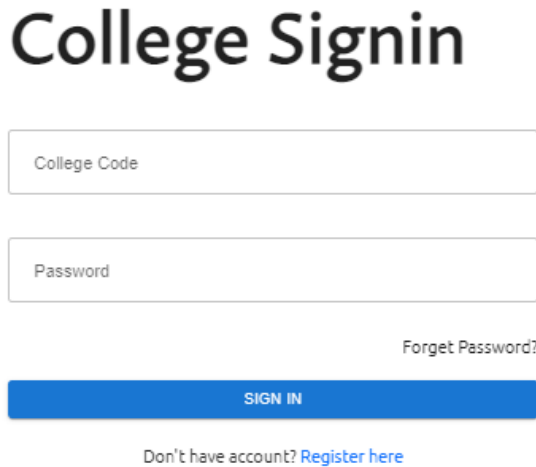
There is no registration page for counselors. They are provided with the credentials (username and password) from the college. The college registers the counselor from their end of application. Here too we have used the JWT verification method for authentication and authorization.

### 3.6 Live Counseling (Counselor)

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## 4 Results and Discussion

### 4.1 The College Module



The image shows a 'College Signin' form. It features a large title 'College Signin' at the top. Below the title are two input fields: 'College Code' and 'Password'. To the right of the 'Password' field is a link 'Forget Password?'. Below the input fields is a blue button labeled 'SIGN IN'. At the bottom of the form is a link 'Don't have account? Register here'.

Figure 3. College Sign In

The college module is the most important module as it kind of acts as an admin of the application. figure 3 shows the 'Sign In' page for college. College can sign in on the application using valid credentials.

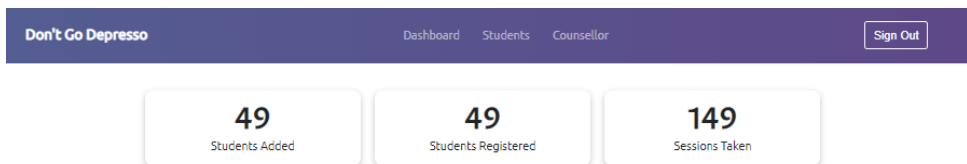


Figure 4. College Dashboard

Figure 4 shows the college dashboard of the application. The number of students added on the application can be seen here. The College can handle the number of students and counselors added here by clicking on the respective tabs.

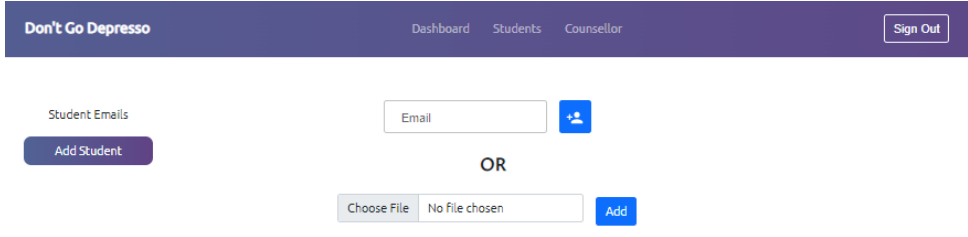


Figure 5. Student's Tab from the College Dashboard

As shown in figure 5, by entering the valid email id, the college can allow a specific student to use the application.

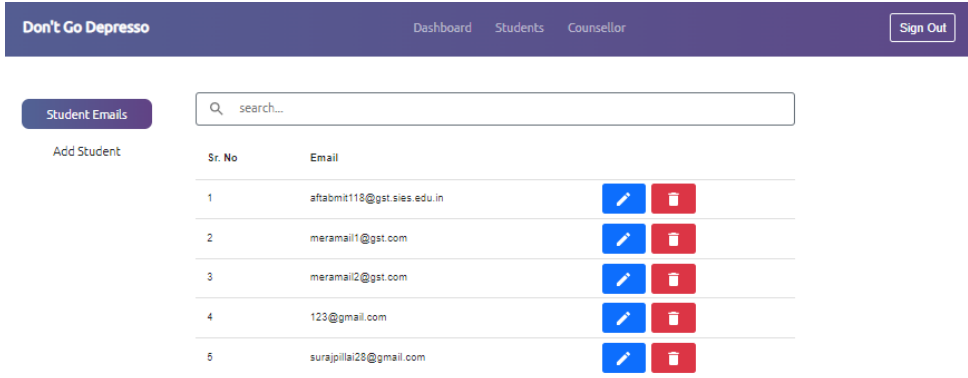


Figure 6. The Student's Tab for College Module after successful addition

Once the college has successfully added a student's email id, they can check for confirmation in the 'Student Emails' tab located on the left hand-side of the page. The same is shown in figure 6. Just like addition, the college can also choose to edit or delete the student's email id whenever necessary.

Student's email ids can be added in this case. However, we are talking about an organization here. An organization will have a lot of students and it would be time consuming to add every student's id one after another. Therefore, we have provided an alternative for that. A file containing details of email ids of 'n' number of students can be added. This will help save a lot of time.

## 4.2 The Student Module

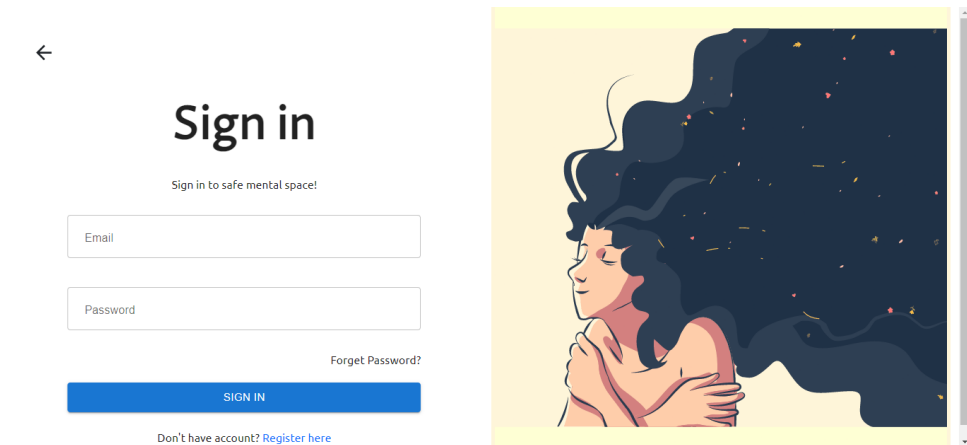


Figure 7. Student Sign In

Figure 7 shows the 'Sign In' page for students. Students can sign in on the application by using the valid credentials. If the student does not have an account on the application, they can make and account by clicking on 'Register here.'

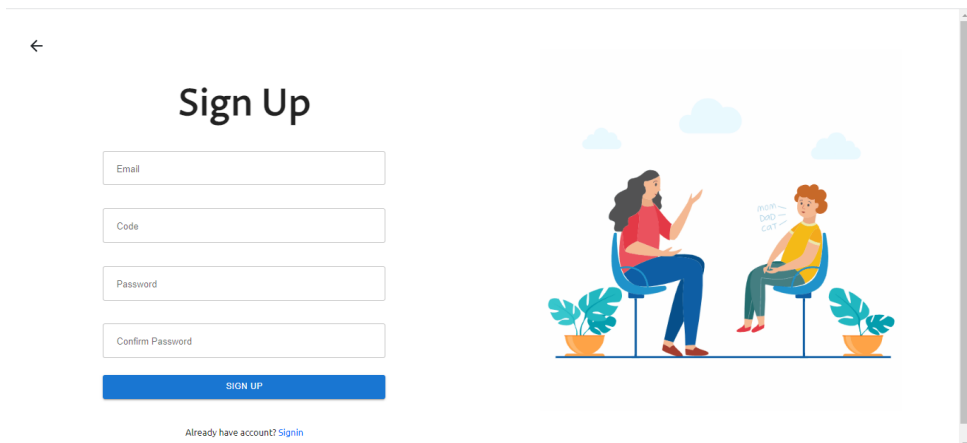



Figure 8. Student Sign Up

Figure 8 shows the 'sign up' page for students. Students who have not yet registered in the application can create an account easily. All they have to do is to mention their email id and password. They will also have to enter the code provided to them by the college. If they enter the wrong code, they won't be able to register. The code will be unique for every organization. Every organization has to provide a code to their students. Students registering using the code would be only able to register on the application.



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### Appointments Schedule






| Sr. No | Schedule  | Counsellor               | Status  |
|--------|-----------|--------------------------|---|
| 1      | Requested | 6268526e0f1780fbcd0f5383 |  Waiting |
| 2      | Requested | 6268526e0f1780fbcd0f5383 |  Waiting |
| 3      | Requested | 626852630f1780fbcd0f537a |  Waiting |
| 4      | Requested | 626852630f1780fbcd0f537a |  Waiting |
| 5      | Requested | 626852630f1780fbcd0f537a |  Waiting |

Figure 9. Student Dashboard

The student dashboard can be seen in figure 9. The students can schedule appointments with the counselor from this page. The name of the counselor they have chosen and the status of their appointment can be seen in figure. Here, the status of the appointment is shown as 'waiting.'

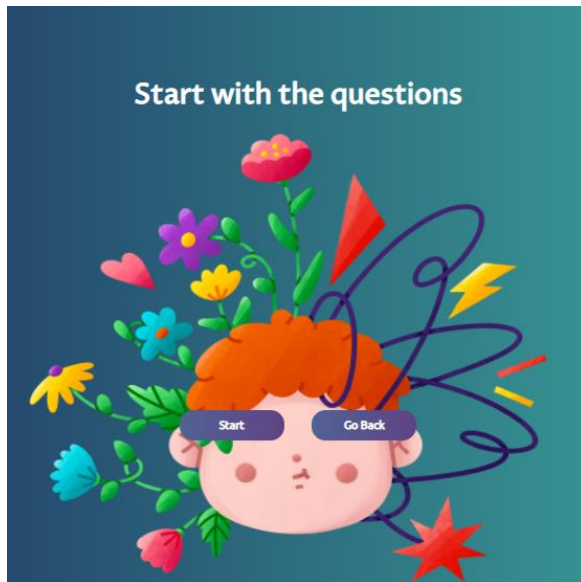
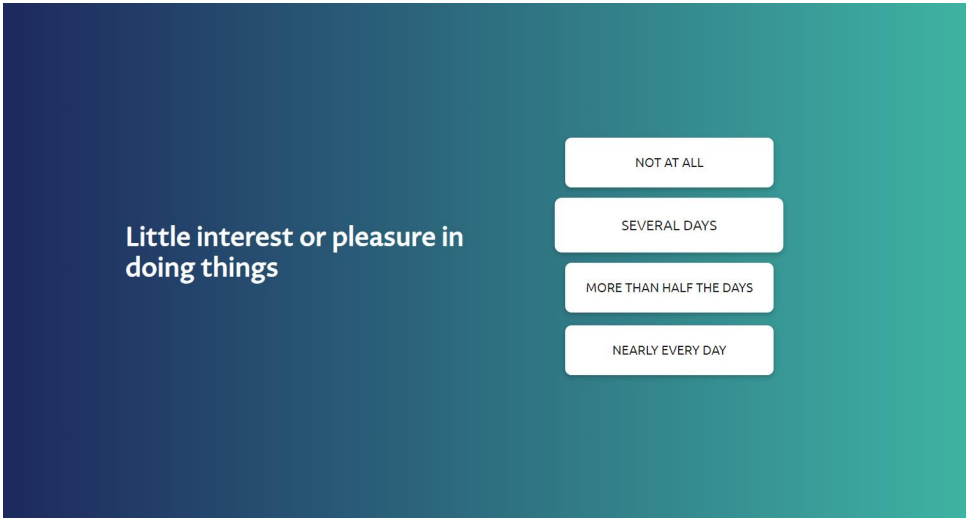
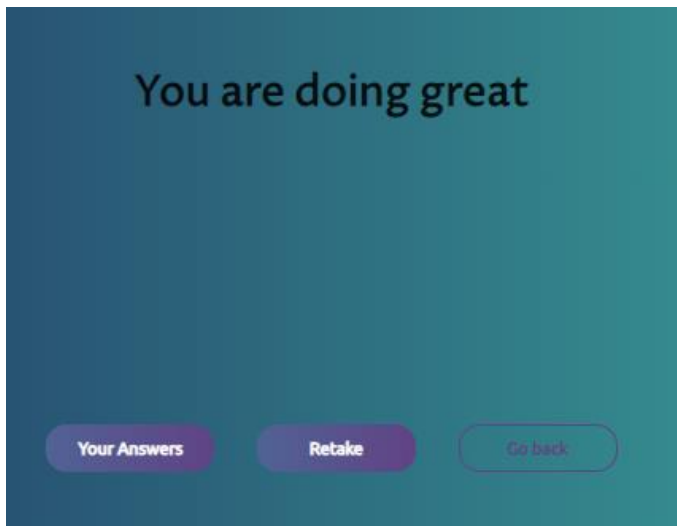


Figure 10. Student Questionnaire



**Figure 11.** An Example of Questions under Questionnaire

Figure 11 shows an example of the questions that the users attempt in the questionnaire.



**Figure 12.** Example of student's questionnaire's result

Students can attempt the questionnaire that will let them know how much they are in need of counseling. The questions are simple and can be answered whenever they want. Before adding the questions in the application, we verified the questions by our college's counselor. Questionnaires can be seen in the figure 12

**Request for an Appointment**

An appointment request will be send to the counsellor with your profile. We highly recommend you to attemp the questionnaire before requesting appointment.

Select Counsellor

- Aftab
- Suraj

Questionnaire Request

Figure 13. Request for Appointment

Figure 13 shows how a student can schedule appointments with the counselor. It is recommended to attempt the questionnaire before going for e-counseling. The student has the liberty to choose the counselor from the list of counselor's provided.

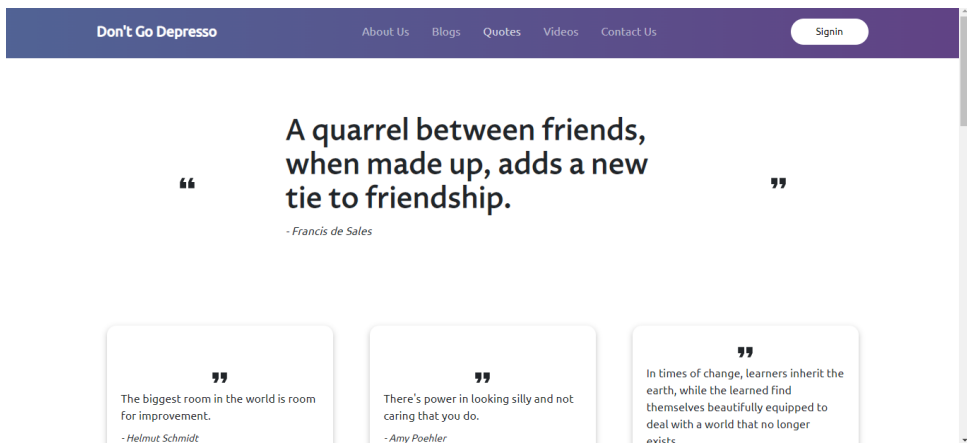


Figure 14. The Quotes Page

The Quotes page, as shown in figure 14 contains inspirational quotes from famous personalities.

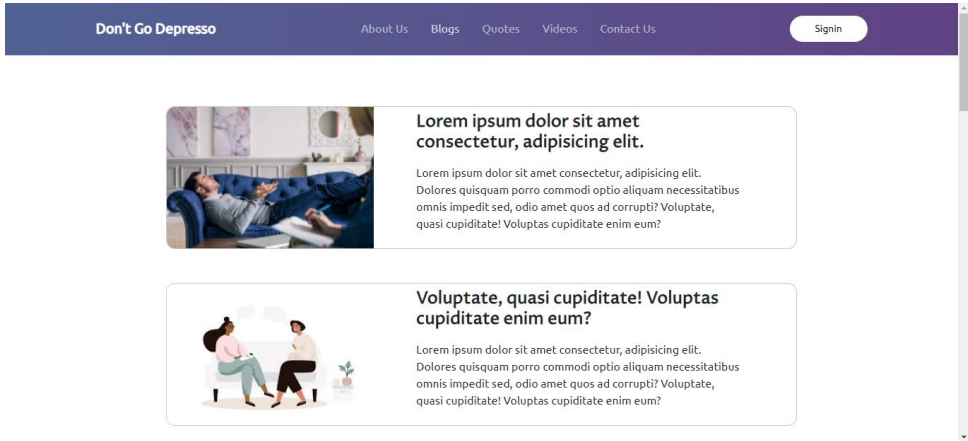


Figure 15. The Blogs Page

E-counseling has a lot of advantages. But, many people still do not know how e-counseling works. Therefore, we added the 'blogs' page. Blogs page, as shown in figure 15 contains informative blogs related to e-counseling.

### 4.3 The Counselor Module

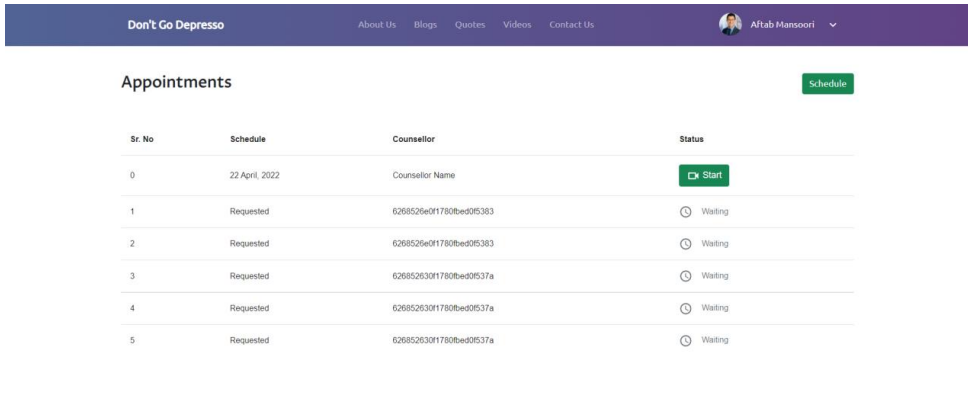
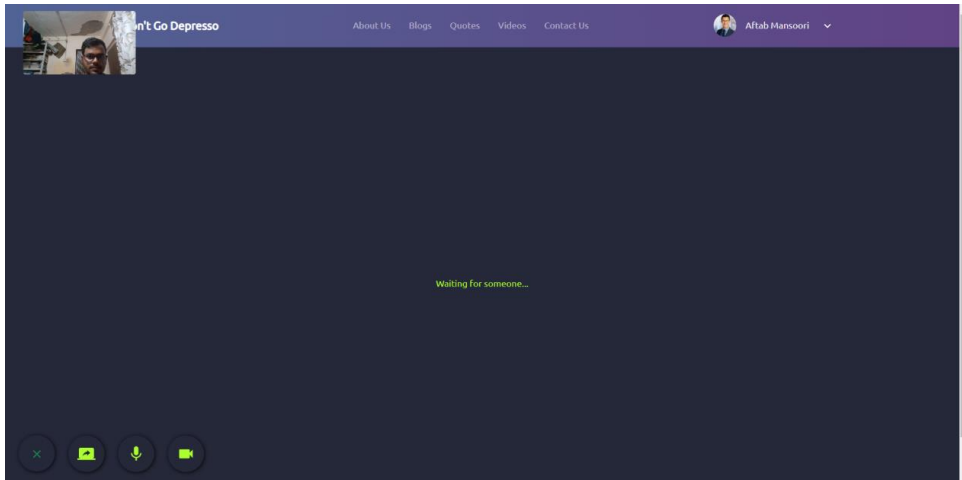


Figure 16. Counselor Sign In

Figure 16 shows the counselor's appointment page. The counselor will be able to see the name of the students, the date and time in which they have requested for a counseling session. The counselor has the right to accept or reschedule the appointment to a later date.'



**Figure 17.** Live Counseling Session

The interface for online calls for e-counseling can be seen in Fig. 17. The entire counseling session will be held virtually.

## 5 Conclusion

There is an invisible barrier which stops the people from going for counseling in our country. This web application might help us remove that barrier from society and try to indulge more people in counseling in the coming years.

The web-application is developed keeping in mind the mentality of all the users. Even if a user does not know or believe in counseling, separate blogs sections have been provided to give them a clear idea about counseling.

Since the web application is based on an organization basis, more people will be able to avail the e-counseling services. Thus, we have achieved our objectives with the web-application while also improvising over the existing systems.

Based on the research done for the web-application, it can be concluded that it can be further expanded in various ways. The addition of advanced machine learning and artificial intelligence will make the web-application more intelligent.

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