

Requirement Research Data Analysis

For Skin Issue Diagnostic Solution

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Data Collection Method

We used Google Forms to create our questionnaire and posted them on social platforms like Facebook, Twitter, Wechat Moment, Weibo, etc. We have collected 169 responses for our questionnaire. We have also performed 7 in-depth interviews on certain topics which were chosen based on survey data.

Survey/Interview Participants Demographical Background

The majority of participant are between 15 to 54 years old. 58% of them are female and 41.4% of them are male. Regarding occupation, most of them are students and engineers. Around one third of the participants are married with kids.

App Solution Viability Validation

- **Skin Problem Popularity**

From the survey results, we find that a little bit more than one third (33.1%) of the participants have had skin anomaly over the course of the last two years. And for those who are parents, two thirds of them used to be bothered by skin problems with their kids. Thus, it's safe to draw a conclusion that skin problem is common in our daily life.

- **Participants Technology Comfort Level**

What we can tell from the survey results is that more than half (59.7%) of our participants trust the diagnosis provided by artificial intelligence and 70.6% of them are currently using smartphones to obtain health related information, which is a pretty good signal for our product. Among these people who used to have skin problems, around 41.2% of them tried to rely on the Internet to understand their symptoms. What's more, 79.2% of the participants would like to have an app that can diagnose skin problems and over one half of them (around 62.2%) feel comfortable to upload pictures of their skin parts anonymously.

- **Preliminary Conclusion**

By looking at the data, we're confident to conclude that skin problem is quite common and there is a large potential market for skin problem diagnostic app.

Features Required Based On Survey Data

1. App needs to give a little info about AI, for example on the splash screen.

Analysis: From the survey data and interview data, a lot of people still do not fully trust software and AI. We need to educate our users and build more confidence. Based on this feedback, we should give out some information about AI and its success rate. This information needs to be obvious so every potential user can see it.

2. App will provide anonymous profiles as well as registered users' profiles.

Analysis: Most feedbacks show that a typical user doesn't want to share their issues due to privacy concerns. The majority of people prefer to stay anonymous. Meanwhile,

for registered users we can track history, and therefore give more accurate diagnoses. To meet the needs of users with different preferences, we decide to support both anonymous profiles and registered user profiles.

3. This dermatology app will be available as a website application and mobile application.

Analysis: 61% of people want to have both web access and mobile app access. 14.5% people only want web access. 24.5% only want mobile app access. Based on this feedback, we decided to implement both a web portal and a mobile app.

4. Users are allowed to upload multiple pictures.

Analysis: We got very good written feedback from our survey that if the user can upload a series of pictures of the issue (for example, different development phases of the problem), then it will be helpful with the diagnosis. Based on this feedback, we should add the functionality of uploading multiple pictures.

5. Feature that allows users to input additional information including age and previous medical history.

- about babies to help with a better diagnosis.
- case histories when the user is willing to share that information

Analysis: From the survey data, 29% of the the interviewees are parents but only 20% of interviewees used to experience issues for their kids. This means skin issues are quite common for kids (For example: diaper rashes, etc.) We should design our app having taken this into consideration. If the diagnostic AI software knows the picture is of a baby, it will be able to make a much more accurate diagnosis. That means we need a feature that allows users to input additional information. Similarly, if we know the user's pre-conditions, it will be very helpful for the diagnosis.

6. Feature that lets the user make an appointment with a doctor close to them geographically or make an appointment on the app.

Analysis: According to the survey responses, 90.6% of survey takers prefer that the application to book an appointment with a nearby doctor for them. Besides, we also received a written response, demanding inclusion of appointment feature into the application. Since, nowadays users prefer to do all kinds of things online, the idea of online doctor's appointment function is good.

7. Since most of the users are not ready to wait for more than 5 minutes, we should include another ML program like a Google Allo so that firstly it can determine the perfect doctor.

Then it can redirect users to make an appointment with the doctor and moreover it will save users' time by reducing the average waiting time.

Analysis: More than half(51.3%) of survey takers don't prefer to wait for more than 5 minutes. Moreover, since doctors cannot be expected to stand by all the times, we thought of including the Chatbot to our application. It will chat with users to gain more information so that users may be redirected to more specific doctor and it will also reduce user's wait time. We also received a written suggestion to include the same.

8. Additional feature that lets the user video chat with the doctor.

Analysis: 83.7% of survey takers wanted to chat with the doctor on the application and as many as 72.5% survey takers are ready to even pay for it. Moreover, two survey takers suggested to include the video chatting feature into the application as it will improve the quality of diagnosis. As the skin ailment diagnosis is based more towards the visual observation, video chatting feature will definitely improve the credibility of application

9. App will recommend over-the-counter medication if that was what the diagnosis resulted in.

Analysis: According to our survey data, 85.3% of the survey takers would prefer to get a treatment diagnosed by the app and would find it advantageous to use the recommended over the counter medicine. From written responses, we analyzed that one of the common reasons for this would be convenience. With most of our survey takers being students and engineers, we realized that an app that could diagnose a skin problem from the comfort of their home or workplace would be extremely handy.

10. User interface will be different for doctors and users.

Analysis: More than 83% of survey takers decided that having the option to talk to a doctor on the app was a good idea and more than 90% people would also find it advantageous to make appointments with their doctors. With the amount of positive feedback we received on this idea, we decided that doctors will be allotted a different user interface from users so they can keep track of their patients' profiles, appointments, etc.

11. Feature that lets you share your diagnosis with your primary care physician.

Analysis: This was a pretty straightforward conclusion. Almost 80% people decided it was beneficial to have any diagnosis that the app came up with, sent to their primary care physician so that any sort of patient care history is never lost.

12. Advertise close by pharmacy stores on the app.

Analysis: We had a little over 85% people giving us a heads up about treatment recommendations from the app, and close to 80% people wanted the app to redirect them to the nearest pharmacy to get the medication that the app suggested. Based on this, we decided it would be a good idea to advertise the closest pharmacies to a user so they can choose which one to go to based on their health insurance registrations.

This would also be a source of revenue for the app.

13. Different groups of discussion forums based on age group, gender, etc.

Analysis: This analysis was a rather tricky one. Just about 50% of the survey takers were okay with sharing information and pictures of their ailment, albeit anonymously with other people who were going through the same thing. This was a borderline decision and we made the call to keep discussion forums on the app.

14. No waiting time for a diagnosis from a doctor, user will submit a picture to their doctor along with his/her concerns and will be notified when the doctor is done with evaluation.

Analysis: From our survey, we concluded that people were willing to wait for a maximum of 5-10 minutes to be connected to a doctor, but we also realized that it would be impractical to expect every user to get a diagnosis within said time too. So, we decided the optimal solution to this would be to forego the waiting period for diagnosis altogether and just notify the user when the doctor finishes diagnosing.

15. Feature that provides relative statistics that describe how common a problem is or how advanced it is.

Analysis: This feature came forth from an idea we gathered from written feedback. We realized that providing statistical analysis along with a diagnosis can help users know exactly what it is they are dealing with and based on the severity of the issue, they can choose to join the discussion forums too.

Changes in Features and Analysis after Interviews:

We have interviewed 7 people on a set of questions and they helped us in adding a few more functionalities and features to the application. Some of the features added to our requirements list after the interviews are as follows:

1. Doctor diagnosis on the app will not be a premium feature- for the first year, this feature will be free

Analysis: In our interviews, we happened to ask questions that touched upon how favourable a premium option of talking to a doctor on the app would be. Almost all of our interviewees had the same answer to this. They were not enthusiastic about paying for an app while it was relatively new and did not have too many reviews yet. So we decided that having this feature free for the first year since launching would be a good compromise. It could be a long term plan to turn this into a premium feature once the app has a lot more users giving good reviews and people start to trust the app to give good diagnosis.

2. App works in collaboration with insurance companies, to take care of making doctor's appointments

Analysis: During a few interviews, when we asked people if they would prefer the app making appointments on their behalf, we received feedback saying that would be inconvenient because most of the people already have some kind of health insurance which takes care of making their appointments.

3. We should focus on making our AI more intelligent than how it started out by hiring a professional.

Analysis: We were stress focusing on the features but not on the quality of said features. After taking the interviews, we analyzed that we need to hire some professional doctors so that we can improve the learning model of our application and use their knowledge till our model becomes intelligent enough to predict with accuracy.

4. We should have a database of various skin diseases. When people want to know more about a disease, they can search and get some basic information about the disease.

Analysis: Two of the interviewees suggested to create a feature where the user can go to the application and look up more information about the disease. Application should fetch data from the database and display the past experiences that people had from the disease.

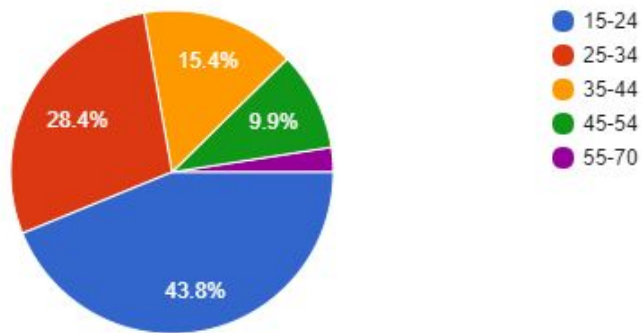
5. Premium feature where user can view a doctor's profile, share pictures of their skin problem and chat with them about their diagnosis.

Analysis: The functionality of viewing profile, sharing pictures with them, chatting(text and video) should be added under the premium feature. If people are benefitting from the application they will not mind paying for its service and so it will support the revenue model of application.

Appendix: Raw Survey Results.

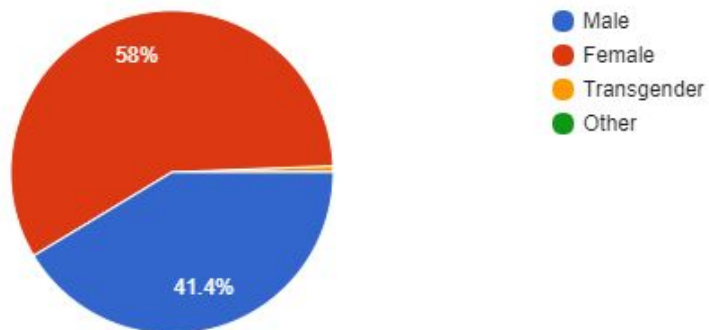
What is your age?

162 responses



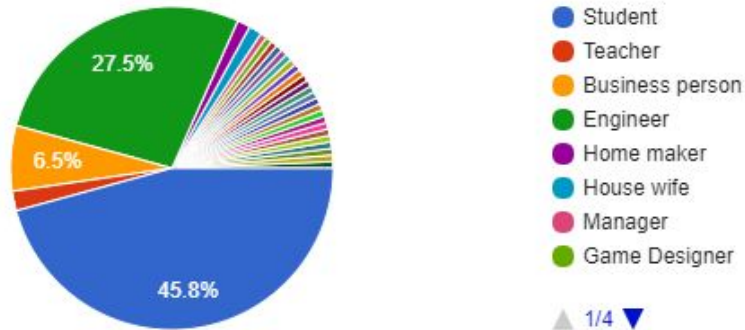
Which gender do you identify with?

162 responses



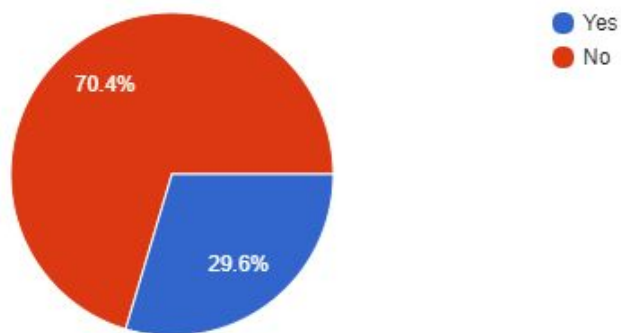
What is your occupation?

153 responses



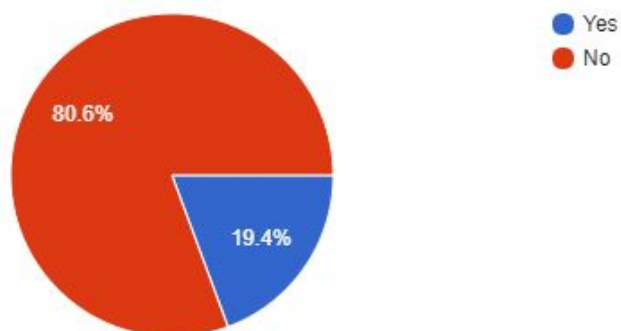
Are you a parent?

162 responses



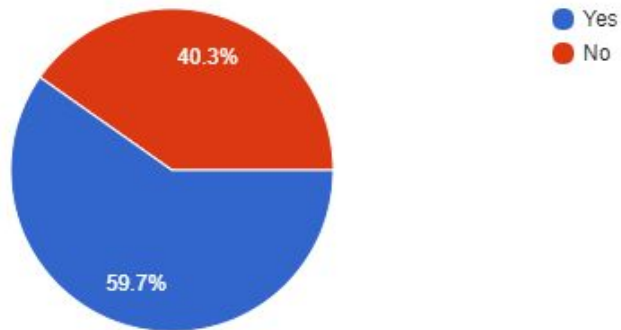
Have your kids ever had any skin problems like diaper rash etc?

155 responses



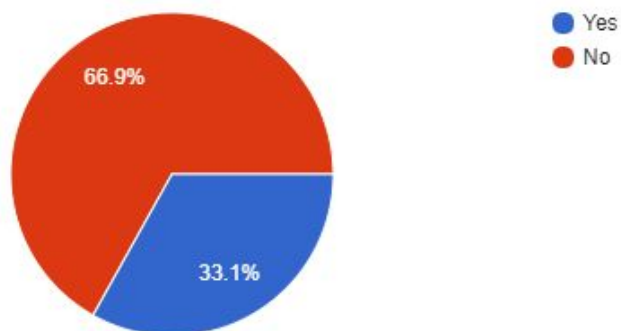
Do you trust AI(Artificial Intelligence) to give you a diagnostic.

159 responses



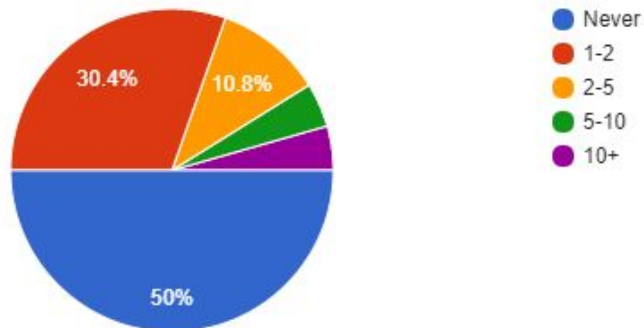
Over the course of the last two years, have you ever had a skin anomaly?

160 responses



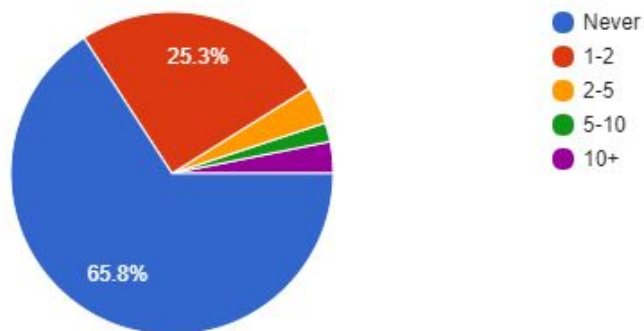
Over the course of the last two years, how many times did you rely on the Internet to understand a skin anomaly?

158 responses



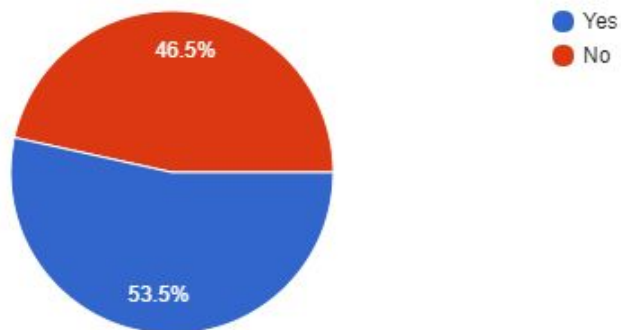
Over the course of the last two years, how many times did you visit the doctor to checkout a skin anomaly?

158 responses



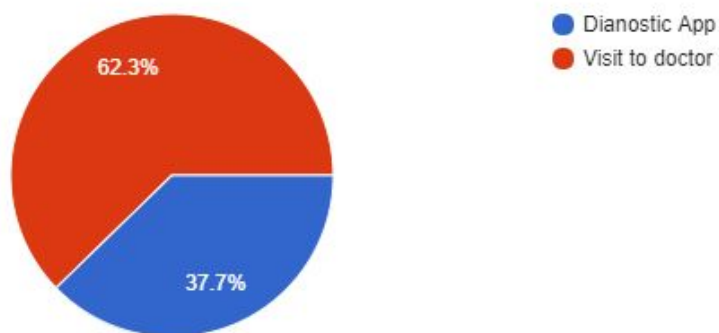
Would you have considered using a skin diagnostic app where you can stay anonymous?

159 responses



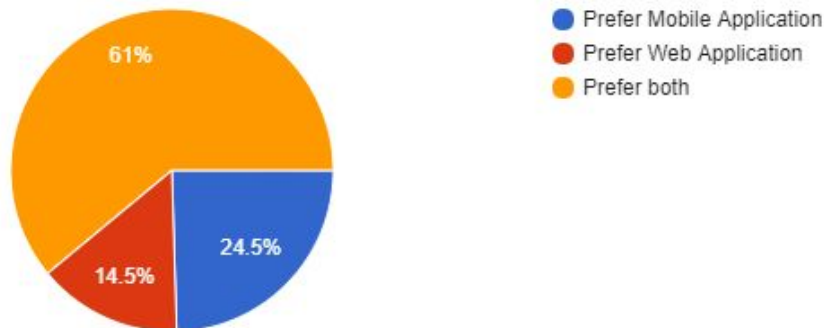
Out of the two options, which would you consider a more convenient option for you- visit to the doctor or an anonymous diagnostic app?

159 responses



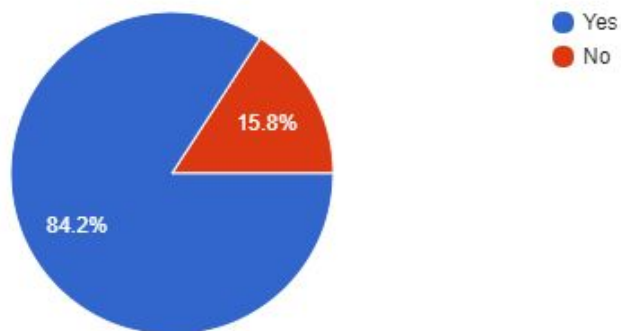
If you have a small skin issue, what would you prefer- a mobile app or a website or both?

159 responses



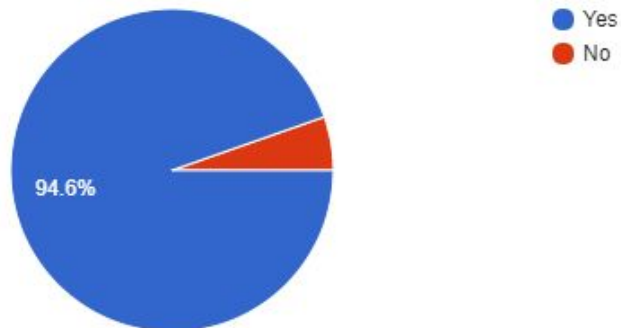
Would you like the ability to chat with a doctor in the application? If no, skip the next question.

152 responses



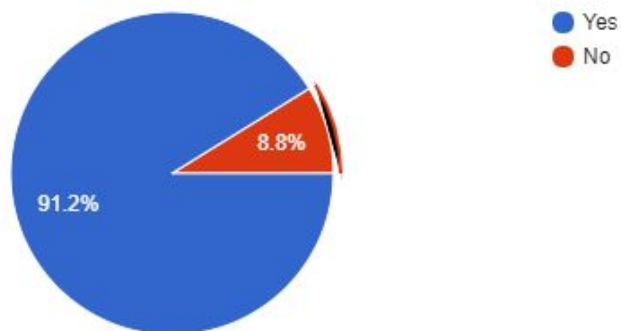
Would you want to be able to look up the doctor's profile information on the application?

149 responses



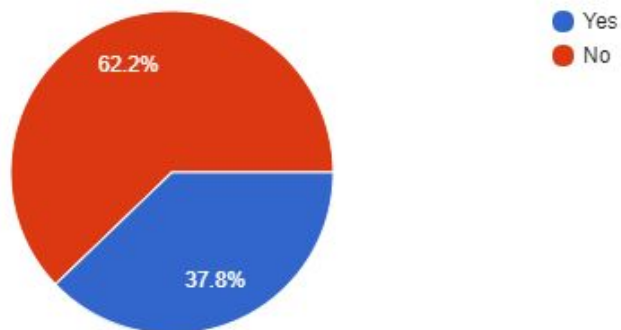
If you choose to make an appointment with a nearby doctor, would you want the app to give you suggestions and make an appointment?

159 responses



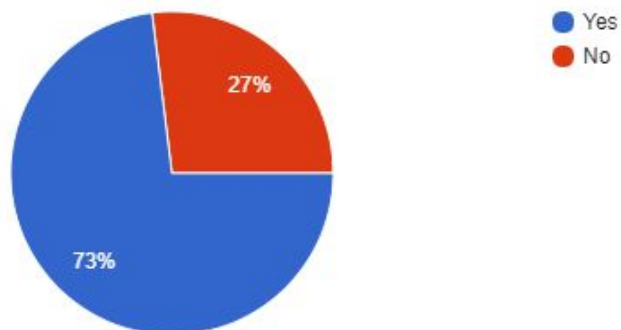
Would you have a problem with uploading a picture of your ailment if it was kept anonymous?

156 responses



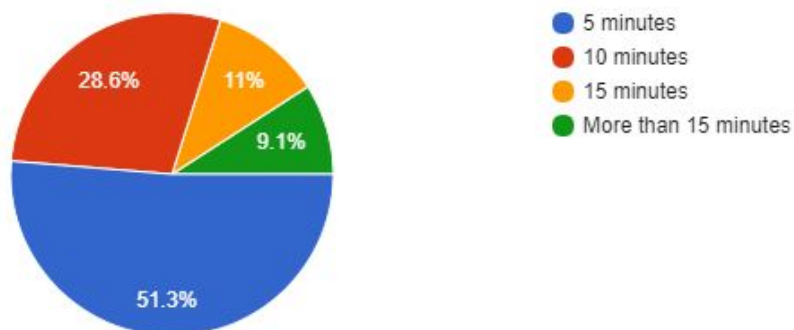
Would you pay for a real-time doctor diagnostic feature?

152 responses



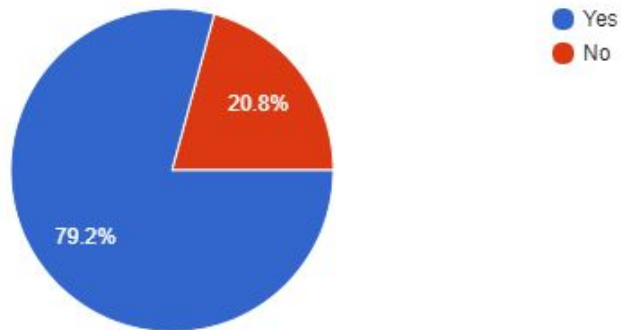
How long do you expect to wait in order to be connected to a online doctor?

154 responses



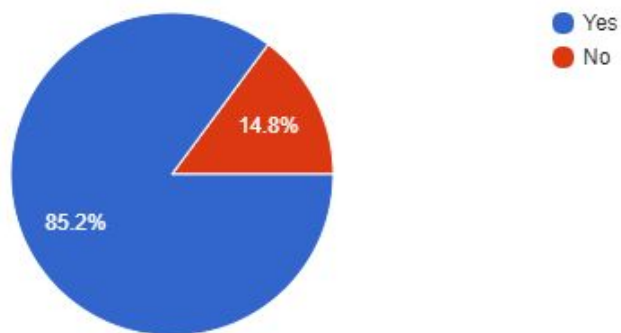
Would you like an app which can diagnose your skin disease?

154 responses



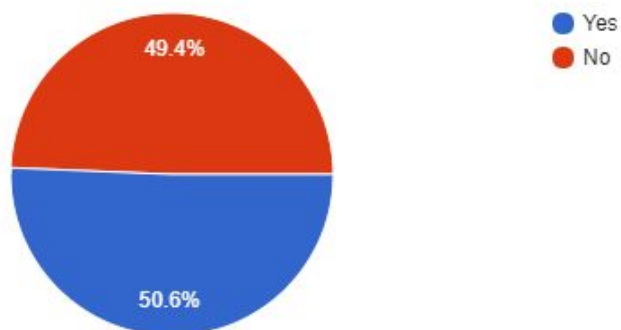
Do you want the application to give you treatment recommendations?

155 responses



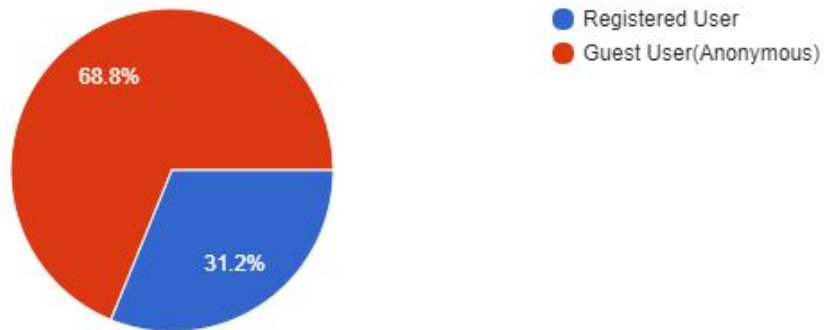
Would you want to share your condition with other people in the same community?

154 responses



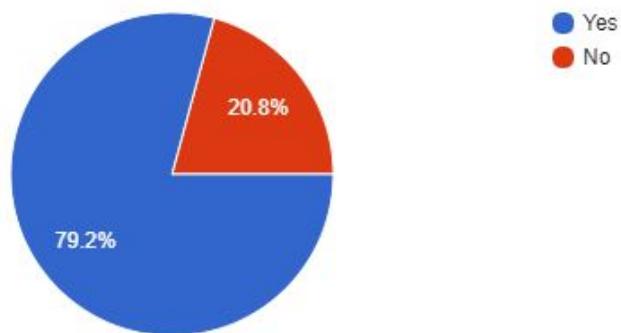
Do you prefer to do it anonymously or be a registered user?

154 responses



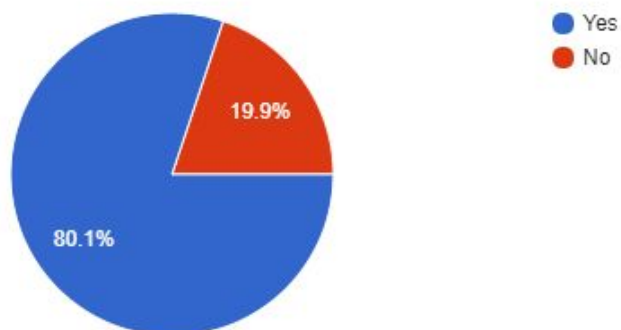
Would you like us to send the diagnosis to your primary doctor?

154 responses



If what you need is just over-the-counter medicine, would you like the website to re-direct you to a pharmacy website that sells medicine?

151 responses



Any additional feature that you would want from this application?

- I would like to see some relative statistics that describe how common my problem is and how advanced it is and also hiiiiii
- Wayne Zhang
- Need samples of similar cases to diagnose. Have the habit of second n third opinion , one from another doctor and other from a similar patients.
- NA
- App should also offer home made remedies/natural remedies to anomalies!
- Yes
- online chatbot to chat for immediate clarifications and help
- Bo Cheng
- Patients shouldn't need to wait for their doctors online as such since their scans are directly submitted online. They should get a notification for their diagnoses whenever they're ready and the Doctor has submitted them back into the system. The diagnoses can come in through an email, with a visit ID which can be used till the problem is solved to get treatment. This way patients can submit details anonymously to the system but openly to the doctor only in person. It would protect their privacy.
- It helps if we get info from experienced doctors for both kids n adults... n also its better if we can have a live chat with doctor so that we can explain our problem over there with photos uploading.
- Questionnaire has covered all d relevant points
- Some times app may not solve the case. It may need doctors observation. App should be monitored by specialized doctors
- Notify when doctor is free/available so that users can ping; instead of waiting for ages there
- If the application took a case history along with the picture rather than just a picture it would make more sense to come to a final diagnosis. :)
- comparing the same diagnosed situation people , the severity and risk factor analization.
- Identify the nearby location doctor if I really need to visit the doctor for 1-1 discussion
- Great app
- Nope
- Referral points