

Mobile Application for Anaemia Prevention and Prediction

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ABSTRACT

The invention is a unique nutrient deficiency-preventing and managing mobile application that allows its user to detect the severity of their deficiencies by taking a picture of their fingernails using their mobile phone camera. Using this data, the app supplies the user with dietary and lifestyle recommendations. Provided that the user follows them, the app suggestions will significantly help the users lower their risk of nutrient deficiencies and overcome the condition altogether. If the deficiency is too severe for the user to overcome with dietary and lifestyle changes, the app will inform the user to seek medical intervention.

Keywords: Nutrient deficiencies, Iron deficiency, Haemoglobin

1.INTRODUCTION

As of now, many people have to go all the way to the doctor's office just to get checked for nutrient deficiencies. They have to endure the painstaking process of going scheduling an appointment, waiting many days for that appointment and, having to drive there just to get a check-up. They go through this process over and over again just to how they are doing. There are also many mobile applications in development that scan certain body parts to find nutritional deficiencies and inform the user of these deficiencies, as well as separate mobile applications that give lifestyle and dietary recommendations for the general physical wellness of a user. However, there is no combination of the two. The main problem at hand is that there are no quick and efficient ways to find out what nutrient deficiencies a user/patient is being affected by, as well as how to get rid of these deficiencies. With the present invention, user's can now just open up their smartphone, open the app, scan their fingernails, and then receive feedback on the status of their nutrition, as well as dietary and lifestyle recommendations on how to correct their nutritional intake before serious medical intervention is required. The scanner will not be as accurate as the blood tests at a patient's local doctor's office, but it will inform the user if they need this type of attention, but aside from these circumstances, the mobile application will be able to provide them the needed information. The way that this idea came to light was that I, the inventor, was watching a documentary in late 202 about different health problems, and so I started to research each of these problems on my own. I found that Iron-deficiency anaemia was an extremely wide-spread problem. I thought to myself about what solutions there were to prevent this, so I did a bit more deep diving and found that it was usually diagnosed through blood tests, and in other cases through apps that scanned certain body parts for signs of iron deficiency anaemia. Furthermore, I then saw, that there were apps and methods that informed a user about their condition, but no method in where it performed this task, while giving feedback to the user on how to improve their daily habits as well. I figured that, if no one else was to do it, then I would gather a few friends, and build an app

that did this. Through my research, however, I learned that iron-deficiency anaemia wasn't the only condition caused by nutritional deficiencies.

Objective of the Mobile Application

The invention relates to helping people prevent further severity of nutrient deficiencies, especially before serious medical intervention is required.

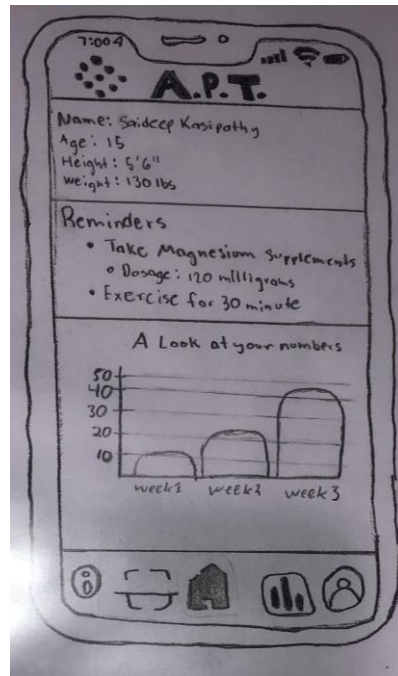


Fig. 1: Home Page, shows reminders and graph with user information.



Fig. 2: Information page, for user to donate to cause and learn more about anaemia and other nutrient deficiencies.

2. BACKGROUND

We decided that We would start off but, expand From anaemia and onto other types of nutrient deficiencies. The daily habits I then decided to focus on were lifestyle and dietary habits, as this was what affected it the most. The goal of the invention is to help people improve their health and lifestyle through treating nutrient deficiencies.

he objective of the application is to assist the user in reaching their personal goals, whether it be losing weight or reducing the risk of nutrient deficiencies. If the user logs their personal information in the application, it will have listed foods, exercises, and possible medications for them to eat or do. The application will also allow the user to scan a body part in order for the application to read their haemoglobin levels. It will also display graphs with the user's personal information on them, which they can use to improve themselves.

3.SUMMATION OF THE CREATION

The layout of every figure/drawing will have the logo and company name on a bar at the top of the screen and a navigation bar at the bottom of the screen. The figures are differentiated by the different sections of the mobile application and are identified according to which Icon is shaded in on that figure. Note that some figures might have the same shaded icon, indicating that it is in the same section of the app, but just a different page within the section. Figure 1 is the “Home” page, which is indicated by the shaded icon of a home at the middle of the navigation bar at the bottom of the screen. The purpose of this page is to display important information and statistics to the user, as well as remind them of completing the next steps they need to take in order to accomplish their health goals. Below the top logo bar, Figure 1 contains an example name, age, height, and weight, of the user in a box by itself. This information was given by the user when they were required to sign up and is used to create recommendations on their overall lifestyle, which will also go hand in hand with the scan. Below the user information box, there is another box that contains the reminders that the user needs to follow through on, whether it is reminders related to the person fitness, and/or lifestyle, recommended to the user by the algorithm using previous scans. Below the reminders box, and above the navigation bar, is a graph which will show a user’s progress in following through on goals such as increasing a user’s nutritional intake, losing/gaining weight, etc., in a said period of time which could be days, weeks, months, or even years. The user will be able to slide left and right to choose different graphs to look at with a user-friendly swiping option, where if you swipe another graph with another goal will show up. Figure 2 is the “Information” page, which is indicated by the shaded icon of a bubble letter “i” enclosed in a circle, at the left-most part of the navigation bar at the bottom of the screen. Figure 2 is a basic organization information page in where the user can know more about the cause that is being helped. At the top there is an oval “Donate!” button, where if the user clicks it, it will take them to the “Donate” section of the organization website. Below the “Donate!” button, there is a paragraph of text that gives users a reason to donate to the cause. At the bottom of the page, there are two buttons with text above them which tells the user to click the buttons to know more about the cause that my organization is trying to help. The first button(the top one out of the two) says “Visit Our Website” which will be a link to the organization website. The second button(the lower button) says “Learn More!”, which will take them to the “About Us” page of the organization website,

which lets them read articles about the cause that I are trying to help. Figure 3 is the “User Settings” page, which is indicated by the shaded icon of a user enclosed in a circle, at the right-most part of the navigation bar at the bottom of the screen. Figure 3 starts at the top by displaying the name of the page/section, which is “User Settings”. It then says “Hello, {insert User’s name}”. Below the title of the page, are 6 evenly sized boxes, which are also buttons to other pages and all have an arrow on the right side of them pointing further to the right, indicating that there is more information on another page that is available.

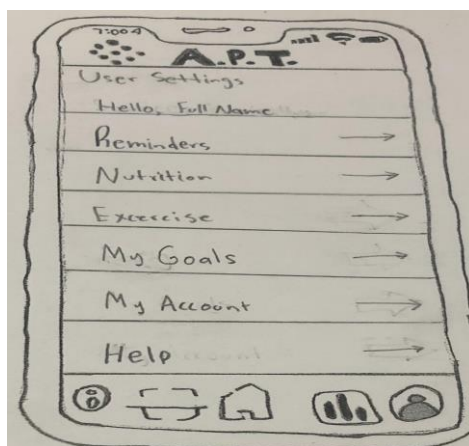


Fig. 3: User settings, where the user goes to input and change their personal information.

The first box is labeled “Reminders”, which gives the user to adjust the settings of the reminders that they receive through notifications on their smartphone, as well as the reminders that are displayed on the “Home” page of the application. The second box is labeled “Nutrition”, which allows the user to change the settings of the nutritional recommendations given by the app. Examples of this would be changing the user's dietary restrictions from “None” to “Vegetarian” or “No Allergies” to “Peanut Allergies”. The third box is labeled “Exercises”, which allows the user to change the settings of the exercise recommendations given by the app. Examples of this would be changing the user's exercise limitations from “No Pre-existing Conditions” to “Asthma”. The fourth box is labeled “My Goals”, which allows the user to change the settings of the goals set by the app. An example of this would be changing the free time that is available to the user for exercise and the intensity at which they want to train at according to this amount of free time from “High Intensity” to “Medium Intensity”. The fifth box is labeled “My Account”, which allows the user to change any personal information that they have inputted into the application, such as changing their sex from “Female” to “Male” or changing their height from “5’ 5” to “5’ 6””. Lastly, the sixth box is labeled “Help” in case the user needs to read any of the “FAQs” or “Frequently Asked Questions”, or needs to contact “Customer Support”. Figure 4 is the “Your Stats” page, which is indicated by the shaded icon of a bar graph enclosed in a square, at the second from the right part of the navigation bar at the bottom of the screen. The purpose of this page is to display the user's stats in an organized and effective manner. This page displays the user's weight, height, and nutrient levels, in addition to the scheduled routine for the day including exercise and food options.

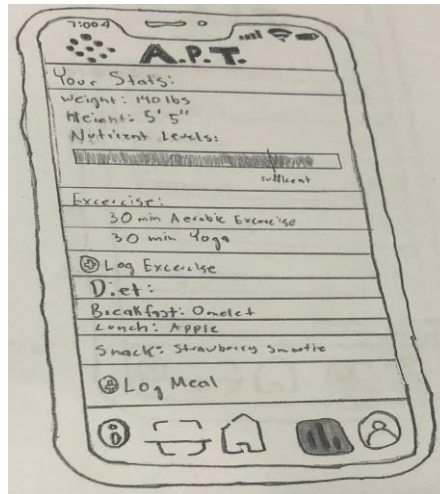


Fig. 4: Stats page, where the user goes to check their reminders and current progress.

This page is where the user will log their activities for the day including intake of food/liquids, exercise, and nutrients. Figure 5 is the scanner page. This page takes advantage of the mobile's built-in camera feature and is used as a camera. The camera featured in figure 5 has a box in the middle of the page in which the user is supposed to place their fingernails. Once the user's fingernails are in the frame and at the appropriate angle, the application will inform the user that an accurate picture can be taken. After the user takes a picture, the application runs the picture of the fingernail through its database and has given an accurate estimate for the user's hemoglobin levels. Once this stage has finished, the application takes the user to figure 6, the scan report. In the scan report, the user is informed of their hemoglobin levels, because this is where the app displays the estimate taken earlier through the picture of the user's fingernails.

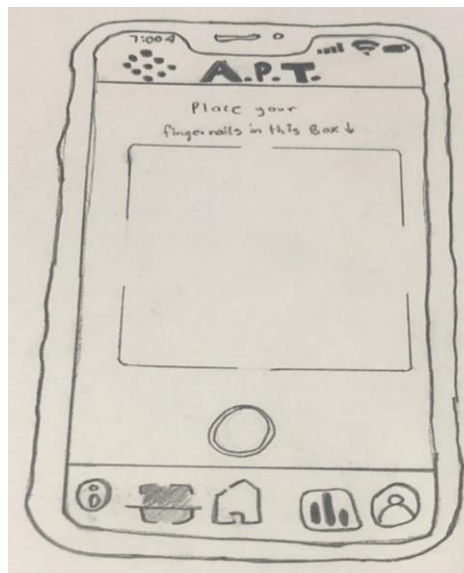


Fig. 5: Scanner page, where the user scans a body part to check for anemia and other nutrient deficiencies.

Below this, the app informs the user of their nutrient deficiencies in order. There will be a list of various nutrients and next to the names of the nutrients either yes or no will be written there,

based on whether the user has a nutrient deficiency or not. Below the list of nutrient deficiencies, there will be a box labeled “scan again”. The user can press this box if they would like to return to figure 5.

Portrayal OF THE Development

Once they log all of their personal information into the application, the application will have listed foods, exercises, and possible medications for them to eat or do. The application will also allow the user to scan a body part in order for the application to read their hemoglobin levels. APT will also display graphs with the user's personal information on them.

4.ANALYSIS

The strategies mentioned by were applied throughout the investigation to assist assure the quality and rigor of the research. The focus groups' audio recordings were anonymised and verbatim transcribed, and a thematic analysis was conducted [6]. Data management and analysis were aided by the use of the qualitative research tool NVivo 10 (QSR International) [7]. After becoming familiar with the data, the first codes were created systematically. Data pertinent to each code were gathered, and themes were then found and examined [8]. The strategy used was inductive open-coding [9]. Usability, technological flaws, games, information, and goal tracker were among the codes produced. Responses could be coded for more than one theme, for as for both the gaming and usability themes.

5. CONCLUSION

Anaemia Prevention Technologies is an application that is used to track and prevent anemia and other conditions through a wide database of foods, medicines, and activities for people with distinct goals to consume/do. It also uses a distinct algorithm to scan hemoglobin levels by scanning a body part.

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