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**Hot topics in software 502.714**

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Mobile Application Support for Eating Disorder

2019

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| **Who did what?** | |
| **Louis Deguito**  **Font Color - Black** | **Michael Singh**  **Font Color - Blue** |
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# **1. Introduction**

Eating disorders are illnesses that are characterized by an abnormal disturbance or distress to one’s body weight or shape with irregular eating behaviors that usually affects the thoughts and emotions of an individual (American Psychiatric Association, 2017). There are 3 common types of eating disorder. Mainly, these are Bulimia Nervosa, Anorexia Nervosa and Binge Eating Disorder. Bulimia Nervosa is characterized by behavior of binge eating followed by compensatory behaviors or cancelling the calorie intake by either purging, use of laxative or excessive exercise. In the other hand, a person with Anorexia Nervosa experiences a constant irrational fear of gaining weight thus severely constricting their food intake. Lastly is Binge Eating disorder into which a person would frequently overeat while displaying different behaviors such as guilt and shame upon eating (Eating Disorder Hope, 2018).

## **1.1 Research Question**

The project will be focused on creating amobile application that will provide support to people with eating disorders and at the same time will raise awareness for the mental health community. Since the application may help administer better medical assistance to patients by recording and storing vital information needed by health care providers. With this, the project then seeks to answer the question *“*Is there a simple way to help people with eating disorder in recording their dietary information through an application and then send the information to the therapist or doctor when necessary?”

## **1.2 Scope**

The target market for the project are the primary caregivers of people with eating disorders and also people with the disorder. The primary user of the proposed mobile application will dependent on the current severity of their disorder, as some individuals with a higher level of symptom of the disorder cannot fully use the application without help. The application will assist individuals in recording information that is needed by their medical health specialist. Some examples of these information that are going to be recorded are age, gender, food they have eaten, time when the food was taken, place where they ate, who are they with when they had their meal and also how were they feeling when they are taking their meal.

Again, the purpose of the mobile application is to only assist the individuals with eating disorders as well as their primary care giver. The mobile application itself is limited on its given function of recording patient’s dietary information and not an application that can be used alone for medical diagnosis, medical intervention as well as in exchange to seeing medical health practitioners.

## **1.3 Software Methodology**

Agile Method will be used as the methodology of the project as it will best suit the approach in the development of the mobile application. In this methodology, tasks are branched or split to short stages of work and tested until all the steps are done. It will be then reviewed based from the primary proposal then be released to the market. Further improvements are constantly added to the application based from its user’s needs (Linchpin SEO Team, n.d.). Additionally, Agile method is a rapid team-based way to produce an application, meaning the application can be launched sooner which is best for the given time frame of 8 weeks. After launching, the focus would be on adding more features that will provide better user experience to our target market.

## **1.4 Measurable Organizational Value**

For this project the Measurable Organizational Value is aimed to impact at a personal and societal level. It is in a personal level because the user who will download and use the application will be affected physically and psychologically. It will affect the way they eat that will also affect their physical wellbeing. It will also affect their emotions thus creating an impact in their psychological health. The society would also be affected because it can raise the awareness to the existing mental health issues in the community, especially eating disorders. It can also give a possibility for change or acceptance in the community to people with mental health disorders. With these 2 areas of impact, the decided measurable goal will be 300 downloads in the App Store on the first Quarter. This number is based from the Rise Up application developed by Recovery Warriors that had gained 300 downloads in the first quarter of its release. A similar number of downloads will be aimed with the proposed application as there is no current big market for this kind of application. Gaining greater download count than the other applications would be a good encouragement for further improvements to the application in the future.

## **1.5 Aim and Objectives**

The aim is to create an IOS mobile application that will provide an easier experience for primary caregivers and people with eating disorder to record their dietary information for the day, which can also be sent to their therapist or doctor.

The objectives are as follows:

1. Conduct a research to find the right components that are needed for the application such as a consent or terms and conditions form and also the right dataset that will collect the information from the user.
2. Develop a user friendly IOS mobile application that can send gathered information from the user. To achieve this objective there is a need to test each stage of the development process to make sure that the quality is at the right standard.
3. Add a feature to the application that records meal information such as time, food, photo (optional), notes. A literature review will be conducted on similar applications that are in the market to look for features that would best suit the purpose of the application.
4. Add a consent form that the user must agree first before using the application. The terms and condition form would prevent users in abusing the application, it will inform them the limitations and usage of the application and ensure them that the information taken from them will be treated with outmost confidentiality.

# **2. Review of Literature**

To further understand the features of the chosen application to be created, a review of multiple existing applications relating to the chosen concept was made. The chosen applications were as follows.

## C:\Users\Louis\Downloads\61796331_2346262792103119_1902713895592656896_n.jpg**2.1 Jourvie**

Figure (Jourvie, 2019)

Jourvie is an app released in 2015 by a company called Jourvie. The goal of the app is to help people suffering from eating disorder by supporting then and making it easier to deal with. Jourvie allows people to keep track of what they are eating by having a food diary and be able to export the information so it can be used to show your doctor. The categories Jourvie has in its food diary is one of its strongest features because it is related to not only food, but certain symptoms people could be feeling when they have an eating disorder. Jourvie offers coping strategies and motivational pictures and quotes to help people. The app has a “Help in my area” feature which as the name says, it shows where you can get help near you, but this feature is currently only available in Germany and the app sets reminders to make sure you don’t miss filling out your food diary. Jourvie currently has over 10,000 downloads and has a rating of 4.1 from 200 users on the Google Play store. This app is a very close interpretation of the app we want to build. This app’s food diary and being able to use the information to show your doctor make it a great example for us.

## C:\Users\Louis\Downloads\62119045_697694837330977_8227833084754526208_n.jpg**2.2 Nourishly**

Figure (Recovery Record, 2019)

Nourishly-nutrition and diet is an app released in 2018 by a company called Recovery Record. This app allows people to link up with their doctor, dietitian, psychiatrist or whoever may be looking after your diet and show them your progress throughout the day. Nourishly can give advice on specialized meal plans and has categories you can choose from that are conditions that can relate to you such as an eating disorder, diabetes or sports nutrition to help with your meals. Nourishly offers a food diary with a bunch of fields to fill out such as the mood you are in or where you ate and what you ate. Nourishly can track how you are feeling, your exercising and your thoughts too. You can plan your meals ahead of time, you can track the medication you take, and you can set goals to do. Nourishly has over 1000 downloads with rating of 4.7 from 30 users on Google Play store. This app has a great food diary and mood tracker for a person.

## C:\Users\Louis\Downloads\61706065_591053891302985_5633270841916522496_n.jpg**2.3 RR Eating Disorder Management**

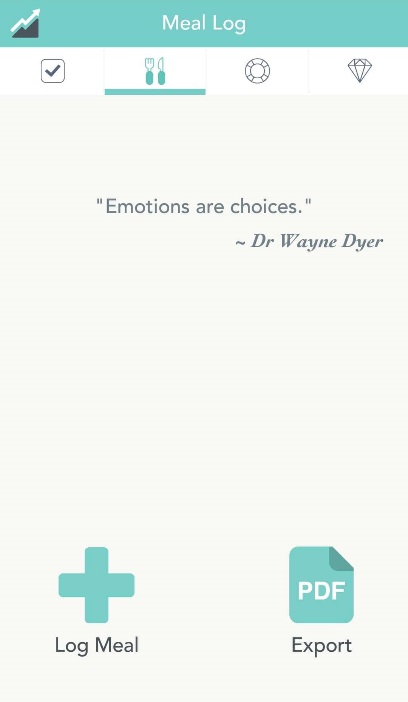
Figure (Recovery Record, 2019)

The RR Eating Disorder Management is another application developed by Recovery Record and was released on 2011 in both iOS and Android (Health Navigator, 2018). The application has 5 main tabs at the bottom of the screen which are named as *Connect, Logs, Log Meal, Check-in* and *More*. First is the *Log Meal* which is the main feature of the application. It can log the meals of the user and will prompt them with multiple questions such as “Did you skip meal?”, “Who did you eat with?” and “Portion size of what you ate?” *Check-in* is where they can log their thoughts, feelings and behaviors, accompanied with their own questionnaires to record valuable information from the user. There is also another feature called *Goals* where the users can create custom goals for themselves and track their progress towards it. It also provides rewards for each goal that are achieved. *Logs* is where all their meals and check-ins are saved. They can view logs either through a feed, based from the recent days or by calendar per month into specific days. *Connect* is where clinicians can connect and view the user’s logs. The clinicians can create comments, send messages, create goals and meal plans, but this feature has a fee for a clinician to use. Clinicians must also create an account to view their patient’s activities. Lastly is *More*, this is where the settings and other extra features are located. In here, users can set reminders and notifications plus access another feature where they can find health care support in their area. Currently, the health care support feature is not accessible in New Zealand.

The application currently has a 4.9 rating out of 5 on the iTunes App Store. Overall the application is great because it provides an array of features for its user, the only aspect to consider is the fee for a clinician to have access to their patient’s records.

## **2.4 Rise Up: Eating Disorder Help**

Figure (Recovery Warriors, 2019)

****Rise Up: Eating Disorder Help was created by an organization named Recovery Warriors, it was first released as an IOS application in 2012 and as an android version on the Play Store in 2015. The main features of the application are logging of mood and logging meals (Health Navigator, 2018). When users first open the application, they are immediately directed to the *Check-in* screen which is one of the 4 tabs of the application. The remaining tabs are *Meal Log*, *Copping Skills* and *Extras*. In *Check-in* users can rate their mood by accessing sub tabs which are labeled as emotions, actions and drugs. The sub tabs will then let the users choose words that best describe their experience. The next main tab is the *Meal Log* which is where users can log meals in detail based from time, food, location, mood, companion and eating behaviors. After logging a meal, motivational photos and quotes pops out to give encouragement to its users. On both the *Check in* and *Meal Log* tab there is an option called *Export*. This option allows the user to choose a specific date and the log from that date will be saved into a pdf file in their phone. The third tab of the application is the *Coping Skills* which gives positive affirmation about one’s view of self. Lastly is the *Extra* tab where the settings is located, where modifying reminders can be done to different times of the day. Users can also create a security pin that they must enter before they can use the application. The application also has a feature that will help find a health care support in the selected area, but unfortunately this feature is currently not available in New Zealand.

The Rise Up: Eating Disorder Help has a 4.7 rating out of 5 in the iTunes App Store. The application provides good support to people with eating disorders and all the features are free to use.

## **2.5 Discussion**

The 4 application that have been reviewed resembles the function of the proposed mobile application to be developed. Only 4 applications were reviewed due to the small number of applications that are available in the market that are targeting people with eating disorder. Individuals with eating disorder is a smaller market of users, so a small market of users equates to fewer applications developed because of the absence of demand. Even though this is the case, it opens up an opportunity to create better applications for the specific market. Possible users will have more options to choose from and is also a good way in raising awareness to the community.

From the applications reviewed, we acquired knowledge of their features and functionalities that could be used for our own application. The main similarity of the applications is that they did not only focus in meal logs or entries but added features that will help users in terms of their eating disorders. An example of this is including an option to find health care support nearest of the users but only 3 applications reviewed have this feature. The 4 reviewed application also offers varying options to connect their users logs to their health care provider. RR Eating Disorder Management have a unique feature to connect clinicians to its users through the application, the clinicians can access the users logs, leave comments, send messages and create goals or meal plans via the application to their clients. While Rise Up: Eating Disorder creates pdf files that can be save into phones.

Among the reviewed applications, RR Eating Disorder Management was the best one because, it has a variety of features to support its users and it also has 4.9 out of 5 rating in the market. Its *Connect* feature allows clinicians and their clients to connect directly through the application without using additional software. It also has the features of other 3 reviewed application which are needed to support users with eating disorders. All of the set of questions from the applications related to logging a meal have a good amount of data that will be collect ranging between 5 to 15 questions. The aim is to collect the same amount of data ranging between 5 to 15 questions for the meal log to our proposed application to provide clinicians a good amount of information that they can analyze for their patients. Most of the application has a feature that displays previous logs that have been done from earlier days and also has a way of sending the collected data to a health care specialist. We will try to add both of these features to the proposed application as it is an important feature that most of the other applications have. Lastly, both Jourvie and Rise Up have a feature that gives their user some motivational photos and quotes to encourage their users. We will save this feature for later for future improvements of the proposed application.

# **3. Methodology**

As we have decided to make a mobile application, we have decided to use the Agile methodology. Apps need to be able to have quick updates as trends and user demands come and go fast and Agile allows us to be able to do this with Sprints which goes through a cycle of tasks that are repeated. These tasks are planning, designing, building, testing, reviewing and then finally launching. (Bhupinder, 2018) These sprints can go from 1 week to 4 weeks depending on the component getting added. Usually a Sprint adds a new component to the app, and this could be known as an incremental update. As we use Sprints, it becomes easier for us to change our plan as we keep going back to it and reviewing our plan constantly.

Agile has multiple benefits when it comes to mobile app development. As features can be handed to a single team or person it becomes easier and faster to develop our app as everyone has a good idea of what they should be doing. Unlike other methodologies, Agile has constant testing involved, this allows our app to have a better quality when the final version is released with less bugs. As we work on small components first to build the app up, we will identify issues early on and this makes it easier to respond to it. (App Partner, 2017) Once our app is released we can still use Agile to keep creating features and make sure we are up to date with current trends and user demands. (Bhupinder, 2018)

# **4. Risks and Mitigation**

In this section we will discuss risks which can cause problems for the development of our project progressing forward and possibly making us fail and not meet our objectives we have set out. At the same time, we will discuss way to mitigate or completely remove ways of these risks occurring.

## **4.1 Main risks**

### **4.1.1 Hardware/Software failure**

As we are working on electronic devices, there is a possible chance of internal components to stop working on our computers and resulting in a loss of work that has been done. The chance of this happening is definitely low, but it can still happen.

Software on the other hand have risk of crashing and losing progress on your work. This risk is more likely as we will be creating an app and to test our app, we will need to constantly open a simulation of a device and this can be very heavy for our computers and chances of crashes happening are higher. Not only this but some people tend to just keep working and not saving their work until the end, but this is problematic as software or your pc can crash.

### **4.1.2 Lack of Communication**

As this is a team project there are risks when it comes to communication with the members. If topics aren’t communicated effectively, there can be misunderstandings among members and a chance for members to be lost and not sure where they are or what they are doing when it comes to the project. Everyone should be on the same page and should understand the requirements. We can come to a point where we just do our work and not show the team what has been done from your side. Making sure people are up to date with where things are is important for the whole team to move forward on the project.

### **4.1.3 Inexperience in mobile application development**

Our team is not very experienced when it comes to developing a mobile app. There are possibilities of us being delayed because we don’t understand how creating an app works or the program, we use to create the app is difficult to understand. The coding language can be a problem as there are different ways to write code depending on the language so this can be considered learning a new language and familiarizing yourself with it which can create delays or even components not being finished on time.

### **4.1.4 Time Constraints**

As this project is very limited on time, we only have 8 weeks in total to complete our project. With such limited time, we have to make sure we have tasks are finished on time and there is almost no room to have major mistakes that would set us back as this could result in the project being incomplete and far from where would like it to be. Insuring we have a good plan in our project management is key to help us succeed and keep track of where we would like to be on tasks.

### **4.1.5 Components being Complicated**

A certain component could be very complicated and since we don’t have a lot of experience in mobile application development, this could cause delays and we can be stuck trying to figure out how to make the component work. This problem could affect other components.

## **4.2 Risk Mitigation**

### **4.2.1 Mitigation for Hardware/Software Failure**

Saving our work often and insuring we have multiple save files and backups on external devices or cloud will prevent a lot of work being lost if this situation occurs.

### **4.2.2 Mitigation for Lack of communication**

We have decided to have face to face meetings weekly to update team members on progress and we will have each other’s contact information.

### **4.2.3 Mitigation for inexperience in mobile application development**

To mitigate this, we have decided that we will learn the fundamentals before we start doing work and know how to work around our app. We will also look a guide online to help us.

### **4.2.4 Mitigation for Time Constraints**

We will make sure to follow our gantt chart as closely as possible and add leeway days on certain tasks so we can have time where we need it just in case a situation does occur where we need it.

### **4.2.5 Mitigation for Components being Complicated**

The best way to mitigate this would be to avoid it and work on other parts until we can go back to it. There is still problem of other parts needing that component but not much we can do there.

# **5. Gantt Chart**

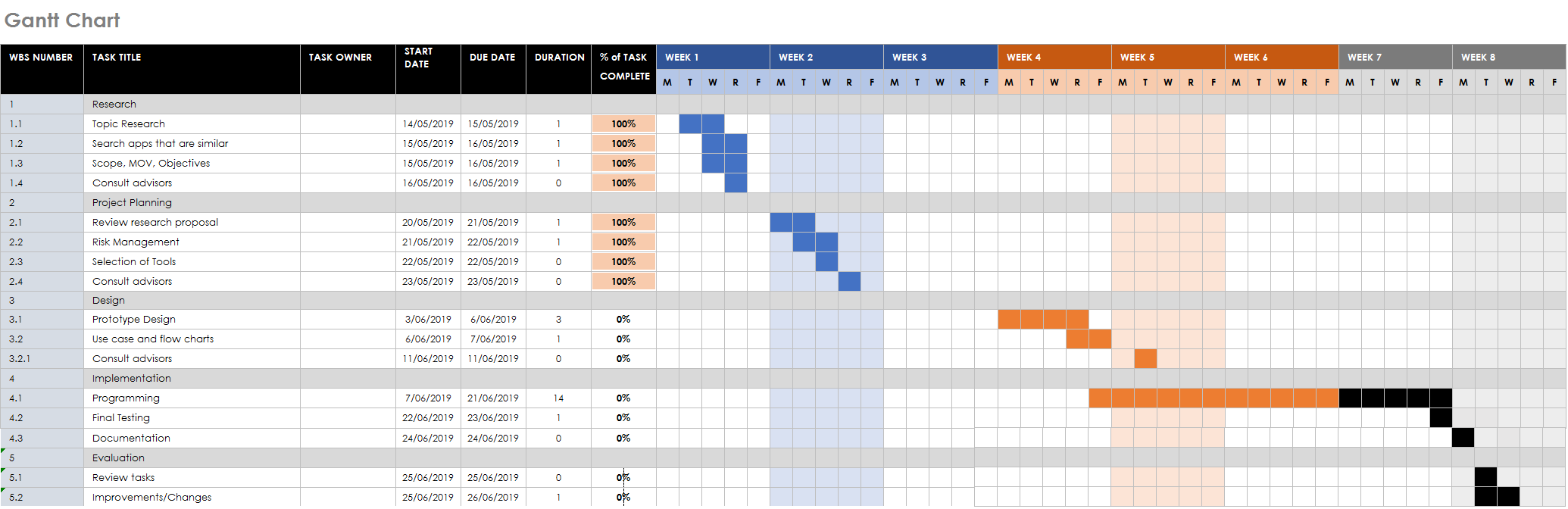
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Figure Gantt Chart

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