

# The 'MyHealthyHeart' App

Dr. Hiba Khan

Royal Devon and Exeter NHS Foundation Trust

## Abstract

The two key types of medication in cardiovascular risk prevention are antihypertensives and lipid-lowering agents. The consequences of uncontrolled hypertension and hyperlipidaemia can be incredibly severe which makes it important that patients on these drugs take their medications regularly. Ten patients at a local General Practice were interviewed to ensure applicability to the general population. Results showed that 70% of patients would consider downloading an 'app' to ensure that they take their medications. The application developer programme 'Sketch' was used to create a prototype application. More research needs to be conducted to better understand application usage in the patient population. Funding would be required to produce and publish the app on the appropriate iOS and android platforms.

## Introduction

Patients with hypertension and hyperlipidaemia often complain that they do not feel unwell and cannot see a discernible benefit from taking their medications. This can often cause non-compliance with medication and result in worsening cardiovascular health. 1 in 5 patients do not take all their medication and the highest number of medications prescribed and dispensed are antihypertensives (21%) followed by statins (16%), inhalers for asthma (13%) and antidepressants (12%). Studies have shown that visible progress is favourable for compliance. A recent trial of a social mobile based game 'Movipill' used social competition and positive reinforcement through points to motivate older patients to take all their medications. This method increased medication compliance by 43%. With the consequences of uncontrolled hypertension and hyperlipidaemia being so severe and being the most commonly prescribed and dispensed medications; a widely available way to increase compliance would greatly benefit the population.

## Methodology

### Data Gathering

Qualitative interviews were taken by the random sampling of 10 patients in a London General Practice to ensure that this problem was applicable to the local population. There were five female and five male patients. Four patients were in the age bracket (40-55) and six patients were between (55-88).

The interview was taken in the format of five binary questions:

- 1) Do you take medications for high blood pressure or cholesterol?
- 2) Are you fully compliant with your medication as it is prescribed?
- 3) Do you have a smartphone/tablet?
- 4) Do you use smart applications in your daily life?
- 5) Would you consider downloading an 'app' to assist you with keeping up with your medications?

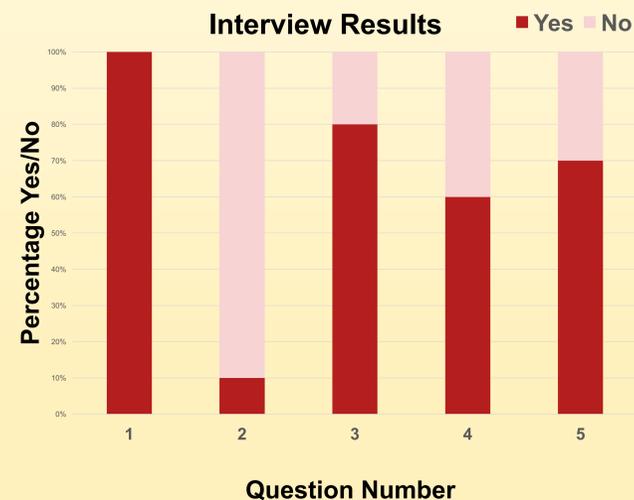
### Application production

A decision to make a smartphone application was made. An app mock-up was created using the 'Sketch' programme. The purpose of this app was to facilitate compliance by providing a secure platform from which to monitor progress through blood test results as a method of positive re-inforcement. A web app called MyHealthyHeart was created. In this app patients can input their blood pressure, cholesterol, weight and height values on a regular basis and monitor their progress each time they are tested. The app produces graphs of their values which will show improvement when compliant with medication and lifestyle advice as well as monitor deteriorations which can be shown to their General Practitioner.

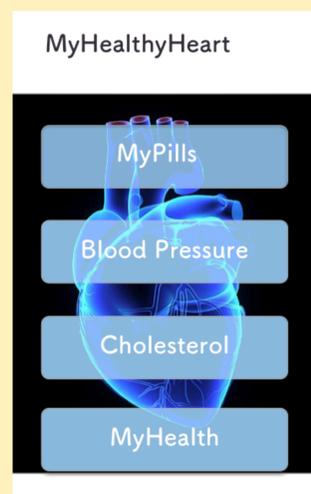
The app also has generic nutritional advice and an exercise regime in accordance with NICE guidelines.

## Results

The interview respondents answers were as follows:

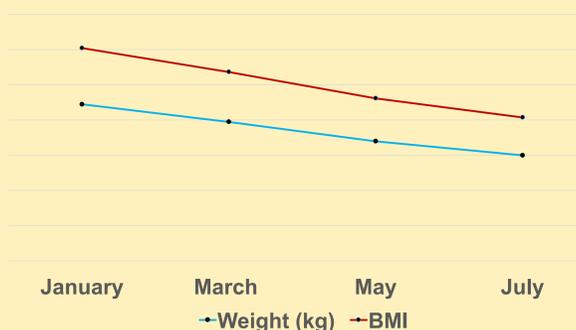


### The 'MyHealthyHeart' App Mock-up



Left: Prototype application home screen.

Below: Simulation of a weight and body mass index graph which is generated once patients input their weight and height into the application. Over time patients can see a visual representation of their progress.



## Discussion

As the sample size was small, the interview results would not be accurately reflective of the population. Interestingly, the patients who said they would not consider downloading an app were the two oldest patients in the sample. Each section of the MyHealthyHeart App has a different function. The MyPills section allows for input of medications and timings with a reminder mechanism for when medications are due. The cholesterol section allows for input of HDL, LDL and total cholesterol levels as found on blood tests. These values are then used to derive a simple graph. Similarly, the blood pressure function charts blood pressure values over time. This can also be very useful for those patients who have a sphygmomanometer at home. The MyHealth section contains functions for input and visualisation of weight and BMI in graphic form and has a generic regimen for exercise according to NICE guidance. NICE states that all adults aged over 19 years should aim to be active for at least 2.5 hours per week which should include 2 days of strength training. There is also a section on nutrition in the MyHealth function which draws from NICE policies on reducing salt, saturated and trans fats and promotes healthy eating.

## Conclusion

With technology growing exponentially and the fact that more and more people are utilising smartphone applications to assist them in their daily lives, applications are definitely one way to tackle medication compliance. With funding I would be able to conduct more extensive research into the local population to yield more accurate data and be able to produce this app for the iOS and android platforms in order to not only assist patients with their medication but to also encourage them to take more responsibility for their own health.

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By Dr. Hiba Khan – Foundation Year One  
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