The Journal of Health Design

RESEARCH INSIGHT

Modern Medical Technology Enhanced Activity Program

Sarah Boorman, Cass Quilty, and Todd Cameron

Modern Medical: General Practice, Practice Nursing, Caroline Springs, VIC, Australia

To Cite: Boorman S, Quilty C, and Cameron T. Modern Medical Technology Enhanced Activity Program. JHD 2017;2(3):23–26. https://doi.org/10.21853/JHD.2017.27

Corresponding Author:
Sarah Boorman
Modern Medical Hobsons Bay
196-200 Hall Street, Spotswood, VIC 3015
Australia
sboorman@modernmedical.com.au

SUMMARY
Our hypothesis was that using technology to measure activity, we could improve the overall health of patients with a BMI >35 and with diabetic or cardiac pathology. Moreover, we hypothesised their biological markers of health would change to confirm this. The number of study participants was small and therefore statistically insignificant; however, our impression is that the size of the study may have produced even more beneficial and significant factors NOT measured, including:

1. the ability to set up a social network for all participants to see how they were doing with their physical activity commitments; and
2. how participants were tracking against the three nurses who were involved in running the consults for the study.

Key Words
Cardiovascular; Type 2 diabetes; self-management; motivation; Fitbit device

INTRODUCTION

The Modern Medical Technology Enhanced Activity Program was developed and run by the nursing staff at Modern Medical Caroline Springs in Caroline Springs, VIC, Australia. It was an unofficial study focused on using technology to improve the overall health outcomes of patients with a BMI over 30 and diagnosis of Type 2 diabetes or cardiovascular disease. The study divided these patients into two groups based on their diagnoses.

The reason for focusing on these two particular diseases was Brimbank Council identified a strong community need. At the time of the study, nearly one in five people in Brimbank Local Government Area (LGA) aged 55 and over had Type 2 diabetes.[1] The district also had rates of heart failure 1.4 times higher than the Victoria state average.[1] Further to this, a PenCat clinical audit of the patients at our own medical practice revealed that 5.9% have Type 2 diabetes and 4.6% with cardiovascular disease.

Our study attempted to address the issue from the patients' point of view. We wanted to encourage self-management of the conditions through improved nutrition and increased activity, thereby leading to an improvement in biometric markers.

We proposed to achieve self-management and motivation in our patients by issuing them a Fitbit device. We chose this device because the company's three-step philosophy to health resonated strongly with us as a team, and was a philosophy and way of life we were trying to teach our patients, rather than putting them on a "diet" in the traditional sense of the word.

The philosophy could be articulated as: "Everyday steps add up to a big impact, stay connected, stay motivated, and make health a habit one day at a time".[2]

In our study, we aimed to reframe the processes with regard to health and fitness. We wanted to steer away from gym memberships and low-calorie fad diets, and introduce the idea of eat less and move more, with a strong focus on gradual weight loss that is achievable and sustainable.

The device itself is a wristband that syncs via Wi-Fi to compatible devices. It tracks activity (i.e. steps, distance, active minutes) and also has the ability to track food, weight, and sleep, thereby allowing the patient not only direct feedback to his/her efforts through the day, but

also the ability to keep in contact with other participants on the program and nursing staff who offered support and motivation along the way. The three nurses that ran the project were also keen Fitbit users.

SUMMARY

General practitioners (GPs) were approached about the study and its aims, and were invited to promote it to their patients. Participants were recruited based on their diagnosis; namely, BMI >35, and age <60. We focused on participants who were confident with using such technology. The GPs who agreed to assist recruited participants based on these criteria and alerted nursing staff. A total of 14 participants were recruited into the study.

Our study ran for three months and during this period participants had access to our practice's dietician and physiotherapist who offered expert advice specific to each diagnostic group—i.e. diabetes or heart disease. Study participants also had weekly one-on-one consults with nursing staff that facilitated the study. During these consults, the practice nurse would offer education or advice based on patient feedback and periodically take and record the patient's biometric data.

Further to this, participants were linked into a closed group on their Fitbit devices in which they could see how many steps fellow participants and nursing staff had completed and could offer encouragement to each other.

Biometric markers were measured at the first consultation, then at the one-month, two-month, and three-month intervals. At the project's conclusion, 13 of the 14 participants showed improvement in their biometric markers. All 14 participants also showed improvement in their K10 depression scores (see Figure 1).

LESSONS LEARNED

Our overall impression of the study was that the participants' success in increasing motivation and self-management may have been more to do with factors that were not measured, such as the ability to form a social network that unwittingly encouraged competitive step targets.

Our impression is also that the increased activity was important as measured by the study; however, a more important element may indeed have been the formation of a like-minded social network.

Limitations included time restraints: the study ran in conjunction with an already very busy chronic disease management clinic. More time spent on planning and implementation would have produced longer patient consultations with more time spent on education and follow-up.

Some participants struggled with the technology and would have benefited from more technical support to use the device and applications to their full effect.

Fitbit devices were relatively new at the time of the trial and quite expensive, so the opportunity to get one free was an incentive to patients to become involved.

If we were to reproduce this study, we would dedicate more nursing hours to facilitate and plan the program. Technical support would also need to be offered throughout the program to ensure participants fully understood and used the applications. We also think adding a psychologist to the allied health team would help manage many of the mental health issues that emerged throughout the course of the study. None of the nursing staff facilitating the project had worked in mental health and feedback from nursing staff suggested this was an area that could have been managed better.

We had more patients apply for recruitment than we had Fitbit devices. With even more participants, the unintended competitive component of the study may have been even greater. If the study ran for a longer period of time, it would have given more scope to track long-term lifestyle changes, which is what we were hoping to achieve. Likewise, it would also have been interesting to note if participants' enthusiasm waned over time and the initial competitive aspect patients experienced gave way to previous bad habits.

CLINICIAN INSIGHT

Interesting idea. There are several issues that may be important in this project:

1. **Self-selection bias:** It is possible that such an intervention would only be acceptable to a limited number of people. The quantum of that number is

an important consideration.

2. **Motivation:** It is possible that those who opted to participate were already highly motivated to become more active. That could be formally tested in a fully powered experimental trial.
3. **Trigger:** It seems as if the trigger to become more active at least for some participants was the number of steps that others were taking throughout the day. That aspect needs careful consideration in developing such an intervention.
4. It would be interesting to learn what made it possible for people to become more active.

More questions than answers, but an excellent attempt to offer some people help to become more active and improve their health.

Dr Moyez Jiwa
General Practitioner
Melbourne, VIC, Australia

REFERENCES

1. Brimbank Local Government Area. Brimbank LGA Vic Health Indicators Survey 2011 Results. Brimbank: Dept of Health; 2011 p. 3.
2. FitBit Australia [Internet]. 2017. [accessed 18 April 2017]. Available from: https://www.fitbit.com/au/home

ACKNOWLEDGEMENTS

Our thanks to Harvey Norman Sunshine who offered us FitBit devices at cost price, so we could help more patients. Special mention to our wonderful allied health team for providing their expert advice and out-of-hours sessions.

PEER REVIEW

Not commissioned. Externally peer reviewed.

CONFLICTS OF INTEREST

The authors declare that they have no competing interests.

FUNDING

We wish to acknowledge funding of this program by North Western Medicare Local.

ETHICS COMMITTEE APPROVAL

N/A

Figure 1: Results summary of improvements in patients' biometric data

Objective	Outcome
Increased exercise tolerance and weight loss	Overall measures improved by: • BMI: **3%** • Weight: **3%** • Waist circumference: **5%** • K-10: **24%** • Cholesterol: **19%** • eGFR: **0%** • ACR: **44%**
Improved cardiac (haemodynamic) status	We had hoped to have the cardiac patient's record weekly blood pressure readings; unfortunately, these were not well documented so we have no data to reflect this outcome.
Improved glycaemic control	• On average diabetic patients reduced their hbA1c readings by **21%** • Twice daily BGL readings were well documented by the patients and showed a steady improvement through the 3-month trial period.