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Publication date:
2017

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Citation for published version (APA):

Hall, J., Stephen, K., Croall, A., MacMillan, J., Murray, L., Wiratunga, N., Massie, S., & MacRury, S. (2017). *mHealth optimisation for education and physical activity in Type 1 diabetes: MEDPAT1*. Poster session presented at Diabetes UK Professional Conference 2017, Manchester, United Kingdom.

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mHealth optimisation for education and physical activity in type 1 diabetes: MEDPAT1

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Aims

To develop and evaluate usability of prototype personalised prediction algorithms for people with type 1 diabetes to optimise blood glucose control associated with physical activity using smart phone technology. To explore the potential to build a knowledge repository founded on case-based reasoning and linkage with an online structured education programme that will increase confidence and levels of participation in physical activity.

Methods

An algorithm for insulin adjustment during a variety of exercise activity was developed in a co-production model comprising health care professionals and people with type 1 diabetes. A closed Facebook type 1 diabetes forum was established to test an app prototype to define data capture points, refine the algorithm and the interface. Focus groups and questionnaires were employed to capture experience and recommendations for further development.

Results

10 participants, undertaking a range of activities, were recruited from the Facebook community to evaluate function and usability of the app over a period of eight weeks. A total of 119 app uses were logged across the evaluation period, with an average of 3 uses per week per user. A peak of 4 uses per user was observed during week 3. This coincided with a modification to the algorithm due to Facebook forum feedback and discussion.

Conclusions

Use of the app initiated Facebook forum discussions which established that while the sample algorithm developed with users reflected ideal behaviour, in practice, different behaviours were adopted. Focus group discussions and one-to-one feedback identified significant real life issues which impacted user behaviour.