Improving Blood Glucose Management Through DiaBuddy: A Gamified Telehealth-based Application for Children With Type 1 Diabetes Mellitus

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Introduction

Nearly 3% of all children around the world are currently suffering from type 1 Diabetes Mellitus (T1DM), making it the leading cause of disability among children. Nevertheless, more than 73% of them fail to achieve recommended blood glucose levels. This situation calls for an urgent need to find a breakthrough solution in assisting children with T1DM to improve their quality of life.

Method

We conducted a comprehensive literature evaluation followed by a mixed-method study design.

Findings

The challenges of performing T1DM self-management tasks among children patients are classified into lack of knowledge regarding low blood glucose, failure of adherence to self-care activities due to pain and inconvenience, and feeling alone and different from their peers which resulted in psychosocial difficulties and poor glucose control.

Proposed solution

Therefore, we are proposing a gamified telehealth-based application for children with T1DM called DiaBuddy which can help increase their diabetes self-care adherence, assist in blood glucose monitoring and provide alerts and help when needed, provide educational information, and minimize the mental health challenges of T1DM care through the use of gamification.

DiaBuddy will offer various features including: a social online game where users can socialize with other T1DM children to prevent loneliness and also provide an incentive to perform diabetes self-care through customizable virtual pets (DiaTown); a dashboard for daily self-care tasks such as glucose monitoring and insulin administration schedules, logbooks, and reminders (DiaToday); interactive gamified educational content on T1DM management (DiaGames); and diet and exercise goals and challenges (DiaChallenge).

Conclusion

We believe that DiaBuddy can serve as a comprehensive solution in improving T1DM self-management adherence, educating children on T1DM care, and providing relevant mental health support to children with T1DM. We hope that DiaBuddy can assist in enhancing the lives of children with T1DM all over the world.

Keyword

Type 1 Diabetes Mellitus, Children, Blood Glucose Management, Gamification, Telehealth, Mobile Application

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