Engaging teenagers with text-message services for glycaemic control.

Commentary on: McGill, D E., Volkening, D.A., Wasserman, R.M., Anderson, B.J., and Laffel, L.M. (2019). Text-message responsiveness is associated with HbA1c benefit in teenagers with Type 1 diabetes. *Diabetic Medicine.*

Commentary

Implications for practice and research

- Teenagers with T1D are at a transition phase in becoming independent for their blood glucose monitoring. Digital interventions may be a key component of behaviour change and management strategies for glycaemic control:
- Involving the user at the centre of the technology design is critical for research that aims to support adherence with self-management for long-term conditions such as type 1 diabetes (T1D).

Context

There is a growing body of evidence associating the use and functions of mobile devices such as text-message services for people with T1D to promote glycaemic control [1,2]. McGill *et al.* [3] addressed self-adherent behaviours of teenagers (13-17 years) with T1D through an 18-month text-message intervention to correlate factors associated with text-message responsiveness and glycaemic outcomes.

Methods

The aim was to compare how characteristics such as HbA1c levels and BG monitoring frequency at baseline and at the end of the study correlated with text-responsiveness during the study. 151 participants received the text-message intervention. HbA1c levels were measured at baseline and every six months. Text responsiveness was measured for each six-month period as the proportion of days where each participant provided (≥ 1BG) response to text-message reminders. The denominator was the total number of days during each six-month period that a message was sent. Text-message responsiveness was calculated as the proportion of days during the eighteen-months of the study with (≥ 1BG) response. Participants with (≥ 1 BG) response on <50% of days were low responders (51%). Participants with (≥) 1 BG response on (≥ 50%) of days were considered as high responders (49%).

Findings

Overall the results showed a statistically significant association between text responsiveness and glycaemic benefits as follows: Low responders showed an increase in HbA1c by (0.03%) from baseline to eighteen months (*P* =0.03); for high responders there was no significant change in HbA1c from baseline eighteen months (*P* =.54). Comparisons were also made between participants with a higher HbA1c at baseline (≥ 8%) and a lower HbA1c at baseline *(*<8%). High responders (n= 42) compared with low responders (n =58) with a higher HbA1c at baseline were significantly more likely to have a (≥0.5%) decrease in HbA1c (odds ratio 2.5 (95% CI 1.02, 5.98); *P* =0.046). High responders (n=30) compared with low responders (n=17) with a lower HbA1c at baseline were significantly more likely to have a final follow-up HbA1c in the target range of (<7.5%); OR 5.7 (95% CI 1.1, 29.6); *P* = 0.03).

Commentary

McGill et al. [3] contend that parameters of monitoring frequency and baseline HbA1c are predictors of long-term glycaemic control. An intervention to promote such adherence is important for the person with T1D, their carers, and health professionals. This study adds to the prior evidence [1] that such interventions improve diabetes self-efficacy, and in common with other studies [2] that text-responsiveness diminishes over time. Whilst the study captured how and when participants engaged a shortcoming is that there was more scope to determine why some participants engaged more frequently than others. However, as shown by the study, participants' behaviour towards BG monitoring was consistent with behaviour at baseline. A further limitation is that the study recruited a predominantly white (78%) participant sample, which may not be representative of the population of teenagers with T1D as a whole and represents a current challenge for diabetes and technology research

Technology is advancing rapidly, and text-message may not be a preferred method of communication. Furthermore, the introduction of a new technology changes the environment into which it is introduced [4]. A person-based approach enhances an integration of behavioural science into intervention development and all intervention components need to be evaluated in full and from the user perspective [5]. This may be crucial where teenagers are concerned in shaping technology that they are likely to consistently engage with.

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References

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