Internet-based interventions: A new modality for diabetes education?

In this section, a panel of multidisciplinary team members give their opinions on a recently published paper. In this issue, we focus on the value of online psycho-educational interventions in improving metabolic control and quality of life amongst young people with T1D.

Internet psycho-education programs improve outcomes in for youth with type 1 diabetes

Grey M, Whittemore R, Jeon S et al (2013) *Diabetes Care* 11 Apr [Epub ahead of print]

DIABETES CARE

Youth with T1D: How helpful are online psycho-education programmes?

1 During the transition to adolescence, young people with T1D can exhibit increased psychosocial stress, reduced metabolic control and inadequate self-management. Previous research has shown that internet-based psycho-education programmes can be beneficial in this group of individuals.

2 The authors aimed to compare the efficacy of two internet-based interventions, *TeenCope* and *Managing Diabetes*, in improving HbA_{1c} and quality of life (QoL) within a cohort of young people aged 11–14 years.

3 In this multisite clinical trial, 320 young people with T1D were randomised to receive access to *TeenCope* or *Managing Diabetes* for 18 months. After 12 months, participants were invited to switch programmes.

4 Participation rates were high, with 90% of youth completing at least one online session. At the 1-year follow up, there was no significant difference in HbA_{1c} or QoL between groups.

5 A total of 128 participants switched programmes. After 18 months, young people who completed both programs had a reduced HbA_{1c} ($P=0.04$) and an increased QoL ($P=0.02$).

6 Individuals who completed both programmes also reported better improvements in social acceptance ($P=0.01$), perceived stress ($P=0.02$), self-efficacy ($P=0.03$) and diabetes-related family conflict ($P=0.02$) compared with those who completed only one online programme.

7 Overall satisfaction was high in both groups, with no significant difference between programmes. For *TeenCope*, mean satisfaction score was 3.97 ± 0.71 (median=4) compared to 3.89 ± 0.56 (median=4) for *Managing Diabetes*. Just over half (52%) of participants with access to *TeenCope* took part in the discussion boards.

8 The authors concluded that although internet-based interventions can improve outcomes in youth with T1D, better results were obtained when individuals completed both online resources. This suggests that youth may benefit from diabetes management education and behavioural interventions.

"Any strategy for supporting young people to better manage the condition is to be welcomed and for those who have access to the internet there are a number of benefits to be had from online diabetes courses."

Clare Shaban, Consultant Clinical Psychologist, Bournemouth Diabetes and Endocrine Centre, Bournemouth

This is an interesting study that not only demonstrates the use of the internet in T1D education for young people but also illustrates the interconnectedness of both educational and psychological aspects of learning to live successfully with diabetes. Any strategy for supporting young people to better manage the condition is to be welcomed and for those who have access to the internet there are a number of benefits to be had from online diabetes courses.

The flexibility of access enables the individual to use the program whenever or wherever there is access to the internet. The ability to do this in the privacy of the home may be particularly important for those who are self-conscious about the condition. There is no need to interrupt educational or social activities or to have unsolicited attention drawn to a condition with which they would prefer not to engage, and which frequently is felt to be stigmatising. Online learning offers scope for prompt, interactive feedback from the diabetes team when required. Furthermore, the anonymity and invisibility of online communication lends itself to easier, more fluent interaction than is often experienced between healthcare professionals and adolescents in the clinic environment. In a condition such as diabetes, where it is so important to "get it right", the scope for guilt, feelings of failure, frustration and perceived criticism are unlimited. Questions and issues that may not otherwise be raised in the clinic can be broached more "safely" online. The importance of family and social support cannot be underestimated. The opportunity for shared learning at home opens the potential for support from those who would not normally attend the clinic and may be beneficial to family and carers.

Grey et al observed that diabetes education is neither consistent nor standardised. However, it is more routinely available than emotional and psychological support in the context of diabetes. Learning to communicate effectively, be assertive and cope with stress, are key life skills for everyone. Moving through adolescence can be difficult enough without the additional demands of managing a complex condition like diabetes. A program such as *TeenCope*, which addresses diabetes in the context of these life skills, is a necessary addition to resources for young people learning to optimise their diabetes control. Neither *Diabetes Management* nor

TeenCope was reported to be sufficient on its own to achieve significant improvements in HbA_{1c}. It is interesting that a greater percentage of young people accessed *TeenCope* and more than half used the message boards. This suggests that it was addressing a previously unmet need. The influence of thoughts and feelings on behaviour is now so widely understood that an integrated program, which covers both the educational and psychological aspects of managing the condition, would be ideal.

The technological age offers a different modality for working with young people to engage in the management of their diabetes. It is our responsibility as healthcare professionals to develop this to meet the needs of young people more effectively, whilst at the same time maintaining "real" human contact. As has been the case with mobile phone applications (apps) to count carbohydrates and blood test meters that plug into smart phones, it is likely that programs such as those reported in this study will invite some of the more reluctant clinic attendees to engage. Despite the many potential benefits of online education, it must be embraced to complement but not replace usual care.

"Online learning offers scope for prompt, interactive feedback from the diabetes team when required."

Ray Jones, Professor of Health Informatics, Faculty of Health, Education, and Society, Plymouth University, Plymouth

In the teenage years, many young people with diabetes (YPD) experience deterioration in glycaemic control. There has been interest in how best to engage and support YPD, particularly in the vulnerable years of transition from adolescence to adulthood (for example, our pilot study with YPD aged 16–25 [www.diabetesappchallenge.org.uk]) or as, in this study, in transition from childhood to adolescence with YPD aged 11–14.

Given its penetration, using the internet seems a good strategy, but one problem in evaluating internet psycho-education is what to use as control. Studies that have "care as usual" are difficult to run and interpret given disappointment for participants that are recruited and then get "nothing" (Rendell and Licht, 2007; White et al, 2007). One approach is to compare more active programmes based on psychological approaches such as cognitive behavioural therapy and problem solving with information (that is, in any case, available). Grey et al take the rigorous approach of a head-to-head comparison between two psychological theory-based internet programmes. This is good in offering equipoise and allowing a theory-driven approach so that it might have been possible to claim that one psychological approach (not just a specific programme) was better than another. The problem arises when, as happened here, there is not much difference between the two programmes and it becomes more difficult to know what to recommend.

Another question with studies of such interventions is how to judge success. It is heretical to suggest, and this study would probably not have been funded or published if my suggestion was followed, but I think that it is wrong to include HbA_{1c} as a primary outcome for two reasons. First, unlike new insulins which may act directly on physiology, psycho-education interventions aim to change knowledge, attitude and behaviour. Only later, if at all, will change in behaviour affect blood glucose control. The theoretical model must have a "change in behaviour" causing a "change in HbA_{1c}". So I argue that HbA_{1c} is a secondary and not primary outcome. Secondly, interventions like *TeenCope* may improve quality of life (QoL) directly without improving HbA_{1c}. As a patient I am more concerned about my quality of life than laboratory measures. My (heretical) view is that studies "set themselves up to fail" by making medically determined laboratory measures, rather than patient-centred measures such as QoL, coping and self-efficacy, the primary outcomes.

Nevertheless, this study assessed QoL and a range of psychological measures. Both *TeenCope* and *Managing Diabetes* groups showed improved QoL (and no major impact on HbA_{1c} when other studies suggest worsening HbA_{1c} among YPD). Although they found no major differences between the two programmes, this 2–3 point improvement on the QoL scale would seem worth achieving in practice. For YPD and this type of intervention, attrition after recruitment was relatively low, 233/320 completing 12-month data. Such interventions are low cost and scale up at very little cost. So why would practitioners not use them? The only reason might be if either intervention had had some deleterious effect on the 87/320 (27%) who dropped out. Although possible (e.g. loss of self-esteem in "failing" the intervention), this is difficult to evidence given that drop outs are different by definition.

The authors' conclusions, that using such programmes seem beneficial and research is needed in routine practice of how best to use them, are well justified. Offering choice of these programmes and encouraging YPD to try both seems worthwhile. The authors acknowledge that despite their efforts their sample under-represented low-income youth, so efforts should be concentrated, in routine practice, on ways of engaging all YPD.

Rendell JM, Licht RW (2007) Under-recruitment of patients for clinical trials: an illustrative example of a failed study. *Acta Psychiatrica Scandinavica* **115**: 337–9

White K, Holden E, Byng R, Mullan E, Kuyken W (2007) Under/over-recruitment to mental health trials. *Acta Psychiatrica Scandinavica* **116**: 158

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