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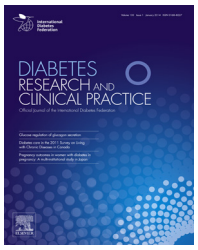

A qualitative evaluation of DAFNE-HART: A psychoeducational programme to restore hypoglycaemia awareness

Emma Shuttlewood [a,*], *Nicole De Zoysa* [b], *David Rankin* [c], *Stephanie Amiel* [a]

[a] *Diabetes and Nutritional Sciences Division, King's College London, Franklin-Wilkins Building, 150 Stamford Street, London SE1 9NH, UK*

[b] *Department of Psychological Medicine, King's College Hospital, Denmark Hill, London SE5 9RS, UK*

[c] *Centre for Population Health Sciences, The University of Edinburgh, Medical School, Teviot Place, Edinburgh EH8 9AG, UK*

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ABSTRACT

Aims: Impaired awareness of hypoglycaemia (IAH) in people with type 1 diabetes is a dangerous condition that is associated with a six-fold greater risk of severe hypoglycaemia than for people with awareness. A new psychoeducational programme, DAFNE-HART, has been specifically designed to address persistent IAH. The initial pilot showed promising outcomes including fewer hypoglycaemic episodes and improved hypoglycaemia awareness. This aim of this paper is to report the development and qualitative evaluation of DAFNE-HART from participant interviews.

Methods: DAFNE-HART incorporates diabetes education with two psychological approaches that have demonstrated efficacy in long-term health conditions: motivational interviewing and cognitive behaviour therapy. The course, delivered across two UK locations included both group and individual support over a 6-week period facilitated by DAFNE educators, trained and supervised by a clinical psychologist. Semi-structured interviews were conducted with 19 participants immediately after their courses and the interviews were analysed using grounded theory.

Results: Five main themes emerged which describe the behavioural changes people made to their diabetes management, the development of new attitudes and beliefs, their experiences of regaining hypoglycaemia cues, reactions to the course format and the significance of the relationship with their care provider. Participants provide insights into how the course changed their view of IAH and led to practical changes in minimising hypoglycaemia.

Conclusions: Integration of psychological techniques into diabetes education can address the cognitive and motivational barriers to restoring awareness and optimal diabetes management. It is suggested that further research is needed to evaluate this programme in a larger sample, over a longer time frame.

* *Corresponding author at*: Diabetes and Nutritional Sciences Division, King's College London, Franklin-Wilkins Building, 150 Stamford Street, London SE1 9NH, UK. Tel.: +44 2078485639.

E-mail addresses: eshuttlewood@nhs.net (E. Shuttlewood), ndezoysa@nhs.net (N. De Zoysa), a.d.rankin@ed.ac.uk (D. Rankin), stephanie.amiel@kcl.ac.uk (S. Amiel).

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1. Introduction

The medical management of diabetes is complicated by the occurrence of hypoglycaemia (low blood glucose concentration) which can be severe enough to cause confusion, abnormal behaviour, seizure, coma and, in rare cases, death [1,2]. Such severe hypoglycaemia is particularly a problem for a subset of people with impaired awareness of hypoglycaemia (IAH). This means they have lost their protective counter-regulatory responses that would normally defend against hypoglycaemia. Consequently, people with IAH do not experience the early warning signs of hypoglycaemia (e.g. hunger, dizziness, sweating) which usually prompt the protective action of glucose ingestion to raise blood glucose concentration.

In adults with type 1 diabetes, IAH increases the risk of severe hypoglycaemia, defined as that requiring external assistance, up to six fold and affects 25–40% of the population [1,3]. Furthermore, IAH has been found to increase the risk of severe hypoglycaemia up to seventeen fold in people with insulin treated type 2 diabetes [4]. Recent qualitative analyses of the experiences of people with IAH and their family provide insights into the on-going anxiety present when people are unable to detect dangerously low glucose concentrations [5,6]. IAH can develop when people have been repeatedly exposed to hypoglycaemia without corrective action [7]. However, research studies [e.g. 8] have demonstrated that IAH can be reversed by strict avoidance of hypoglycaemia through behavioural means i.e. making medication and dietary changes to reduce the frequency of hypoglycaemia and treating any episodes promptly.

Dose Adjustment for Normal Eating (DAFNE) [9] is a well-established example of an international structured education programme for adults with type 1 diabetes. DAFNE promotes flexible insulin therapy and has demonstrated improved glycaemic control, reduced rates of severe hypoglycaemia and improved perceived well-being at 1-year follow up [1]. Nevertheless, a significant proportion of people with IAH (approximately 50%) continue to have impaired awareness after attending a DAFNE course. A number of other programmes specifically targeting problematic hypoglycaemia, such as Blood Glucose Awareness Training (BGAT) [10] and Hypoglycaemia Anticipation, Awareness and Treatment Training (HAART) [11], have demonstrated beneficial outcomes but have also failed to restore awareness completely or prevent severe hypoglycaemia. A group of people with type 1 diabetes thus continue to experience problematic hypoglycaemia that is resistant to conventional educational interventions.

Various studies have explored the barriers that might prevent people from taking the necessary action to reduce IAH and severe hypoglycaemia. Neuroimaging studies have demonstrated reduced stress responses and failure to deactivate reward/pleasure pathways during hypoglycaemia in people with IAH compared to those with intact awareness [12]. Such responses are compatible with de-sensitisation to the stressor and may be expected to reduce subjective awareness of the dangers of each event and impact upon the motivation to avoid subsequent ones. In relation to this, a clinical audit demonstrated that patent with IAH were less adherent to recommended treatment regimen changes than people with intact awareness [13]. A qualitative study categorised a subset of people with IAH as having ''low concern'' about their condition and identified a number of unhelpful beliefs that might reduce people's motivation to address this [14]. These included normalising IAH as being a natural part of diabetes, underestimating the consequences of persistent IAH, a fear of attracting attention or being seen as abnormal by testing for or treating hypoglycaemia and overestimating the impact of episodic high glucose readings. Further qualitative research has reported similar issues [15]. Furthermore, these findings, and the outcomes from structured education programmes to date, imply that education alone is not sufficient to restore awareness and that psychological factors, such as individual perceptions of IAH and motivation also need to be addressed. This rationale informed the development of a new psychoeducational intervention called DAFNE-HART.

DAFNE-HART stands for Hypoglycaemia Awareness Restoration Therapy and was designed for people who had previously attended DAFNE and still had persistent IAH. Like DAFNE, DAFNE-HART was based upon social learning theory (SLT) [16], patient empowerment and increasing self-efficacy via experiential learning. Thus the programme was run primarily in a group format, revised DAFNE principles in relation to hypoglycaemia and encouraged participants to try out new behaviours and report back via blood glucose diaries and group discussion. The innovation in DAFNE-HART was to include principles of Motivational Interviewing (MI) [17] and components of Cognitive Behavioural Therapy (CBT) [18]. The inclusion of these two psychological approaches was to address the motivational and perceptual barriers to restoring awareness in people with IAH.

The MI approach has been found to be more effective than traditional advice giving in a range of behavioural problems and long term conditions, including diabetes [19]. In DAFNE-HART the spirit or attitudinal stance of MI (evocative, collaborative, emphasising patient autonomy) was woven into the style of facilitation. This was to minimise defensiveness and increase motivation to address hypoglycaemia risk factors. Health information was offered via an 'elicit-provide-elicit' model [20] whereby information was first elicited from the group, before new information was offered and then checked back. CBT can address unhelpful cognitions and improve adjustment to diabetes diagnosis and self-management behaviours [21]. The CBT component of DAFNE-HART provided education regarding the link between thoughts, feelings and behaviour around hypoglycaemia and supported problem solving and relapse prevention. It used questionnaires and discussion to support participants to identify unhelpful thoughts regarding hypoglycaemia and to restructure these thoughts via Socratic questioning (questions to elicit alternative perspectives) and reflective writing.

A pilot study of the DAFNE-HART course found significant reductions in severe hypoglycaemia, increased subjective awareness of hypoglycaemia symptoms, and reduced worry and unhelpful behaviour around hyperglycaemia at 12 months follow up [22]. The current study explores the participants' experience of participating in DAFNE-HART,