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Predicting self-care behaviours of patients with type 2 diabetes: The importance of beliefs about behaviour, not just beliefs about illness

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ABSTRACT

Objective: There is evidence that perceptions of treatment may be more predictive than illness perceptions, e.g. medication adherence is often better predicted by beliefs about medication than by beliefs about illness. The present study aims to assess the generality of this finding, by comparing the extent to which self-care behaviours of patients with type 2 diabetes are predicted by patients' beliefs about those behaviours, compared with their illness perceptions.
Methods: This study is a one year prospective cohort analysis of 453 patients recruited to a randomised trial of blood glucose self-monitoring. Behaviour was assessed by the Medication Adherence Report Scale (MARS) and Diabetes Self-Care Activities (DSCA) scales; illness perceptions by IPQ-R; study-specific scales of beliefs about diet and physical activity were constructed by factor analysing items based on beliefs elicited in an earlier interview study involving patients with type 2 diabetes.
Results: Past behaviour, trial group allocation, and clinical and demographic factors predicted between 16% and 35% variance in medication adherence, exercise, and diet scales. Illness perceptions added between 0.9% and 4.5% additional variance; beliefs about behaviour added a further 1.1% to 6.4% additional variance. Beliefs regarding, respectively, the importance of exercise in controlling diabetes, the need to east less, and enjoyment from eating sweet or fatty food, added unique variance.
Conclusion: Beliefs about behaviour are at least as important as beliefs about illness in predicting several health-related behaviours. This suggests the possibility that behaviour change interventions with patient groups would be more effective by targeting beliefs about behaviour, rather than beliefs about illness.

Introduction

There is a strong evidence base for the benefits arising from treating the associated cardiovascular risk factors of type 2 diabetes such as raised blood sugar, high blood pressure, lipids and smoking [1]. However to address these risk factors also requires active self-management. Physical activity, improved diet and weight loss all lead to improvements in these risk factors. Engaging people with type 2 diabetes in active self-management of their condition is challenging [2]. Previous failure to control weight is an important factor for some in the development of the condition. Taking regular medication is also a challenge that presents difficulties. Many people with diabetes need to take nine or ten tablets a day, often on two or three occasions. Concerns about harms arising from educational materials may cause problems for some, others encounter difficulty in remembering to take their medication [3]. Further developing interventions to support patients in dealing with these challenges and engage better with self-management and self-care may lead to more effective care.

Leventhal's Common Sense Model (CSM) [4] has been used extensively to study these self-management behaviours in people with diabetes [5]. It has also informed the design of numerous self-management interventions for people with diabetes [6]. The CSM proposes that how people cope with their illness crucially depends upon their beliefs about the illness, specifically their beliefs about its cause, identity (symptoms and the label attached to those symptoms), timeline, consequences, and how the illness can be controlled and cured. The CSM has now been used in hundreds of published studies, usually to examine the impact of illness beliefs on coping procedures [7]. A major category of coping procedures consists of lifestyle behaviours such as smoking, physical activity and diet [8].

However, despite its extensive use, the extent of prediction of lifestyle behaviour by beliefs about illness is typically small. The most systematic evidence comes from a meta-analysis which examined the capacity of the CSM to predict a variety of coping outcomes, including a behavioural category: "problem focussed coping — specific" [8]. Of the 10 studies cited, seven involved diabetes patients, and

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examined prediction of "diet, exercise, glucose testing, insulin taking" (five studies), "self-management behaviours" (one study) and "levels of diabetes care" (one study). The other three studies examined prediction of medication adherence in a variety of patient groups. Control/cure beliefs were significantly but modestly associated with these behaviours (r = 0.12); beliefs concerning consequences (r = 0.01), identity (r = −0.01), and timeline (r = 0.01) were not significantly associated. Thus, these measures of illness beliefs explained less than 2% of the variance in the behaviours examined.

One possible way to improve prediction and change of these lifestyle behaviours is not only to consider beliefs about illness, as proposed by Common Sense Model [4], but also to consider beliefs about the behaviours being examined. The logic of targeting beliefs about behaviour rather than beliefs about illness in behaviour change interventions has already been proposed and widely accepted for the behaviour of medication adherence [9]. Specifically, Horne proposed an "extended" CSM, incorporating beliefs about the necessity of treatment behaviours and concerns about those treatments (see Fig. 1) [9]. Based on this extended CSM, it has been repeatedly shown using the extended CSM that medication adherence is more strongly predicted by beliefs about medications than by beliefs about illness [10]. Further, although the body of research using the extended CSM has focussed on medication adherence to date, Horne has explicitly flagged up the possibility that it could be applied to "other treatments such as surgery, physiotherapy and rehabilitation classes" (p144) [10].

The present study examines the role of beliefs about self-management behaviours as well as beliefs about illness, in predicting changes in several important self-management behaviours. More specifically, it tests the hypothesis that changes in the behaviours of medication adherence, physical activity and healthy eating over one year in a sample of patients with type 2 diabetes will be predicted more strongly by beliefs about illness than by beliefs about behaviour.

Methods

Design

This study was a cohort analysis of data from the Diabetes Glycaemic Education and Monitoring (DiGEM) study, which was an open, randomised, three-arm parallel group trial [11]. The primary objective of the trial was to determine whether HbA1c at 12 months was significantly different between patients with non-insulin treated type 2 diabetes receiving one of three allocated interventions. These were (i) standardised usual care, (ii) use of a metre with clinician interpretation of results (less-intensive self-monitoring), and (iii) use of a metre with training in self-interpretation and application of the results (more-intensive self-monitoring). A full description of its design and conduct is given elsewhere [12]. The protocol was approved by the Oxfordshire B Research Ethics Committee.

We report here a cohort analysis, with self-reports of medication adherence, physical activity and diet at one year as dependent variables, controlling for baseline self-reports of these behaviours, allocated intervention group, and clinical and demographic factors. Independent variables are beliefs about illness, and beliefs about the three behaviours that are dependent variables.

The study found no significant differences between groups in terms of changes in HbA1c over the duration of a year [13]. Similarly, there were no significant differences between groups in changes in medication adherence or physical activity behaviours [14]. There was, however, some evidence that the diet of those in the group which engaged in more intensive self-monitoring became worse relative to the other two groups, in terms of eating more fatty foods and less fruit and vegetables [14]. A full account of study results in relation to the study aims and objectives as detailed in the study protocol [12] has been published [11].

Sample

The trial recruited 453 patients (n = 260 men, n = 193 women) sequentially from 48 general practices in Oxfordshire and South Yorkshire. Respondents had a mean age of 65.9 years (SD = 10), and had diabetes for a mean duration of 4.8 years (SD = 4.7) and a median duration of 36 months (range 1 month to 384 months [32 years]). Participants were treated with diet only (n = 124), monotherapy (n = 173) or combined oral therapy (n = 156). The majority (n = 350) had no diabetes-related co-morbidity.

Procedures

Baseline questionnaires were completed before randomisation. Final questionnaires were completed by patients before seeing the nurse for final assessment.

Measures

Psychometric characteristics of all self-reported measures of behaviour, and measures of beliefs about illness and behaviour are included in

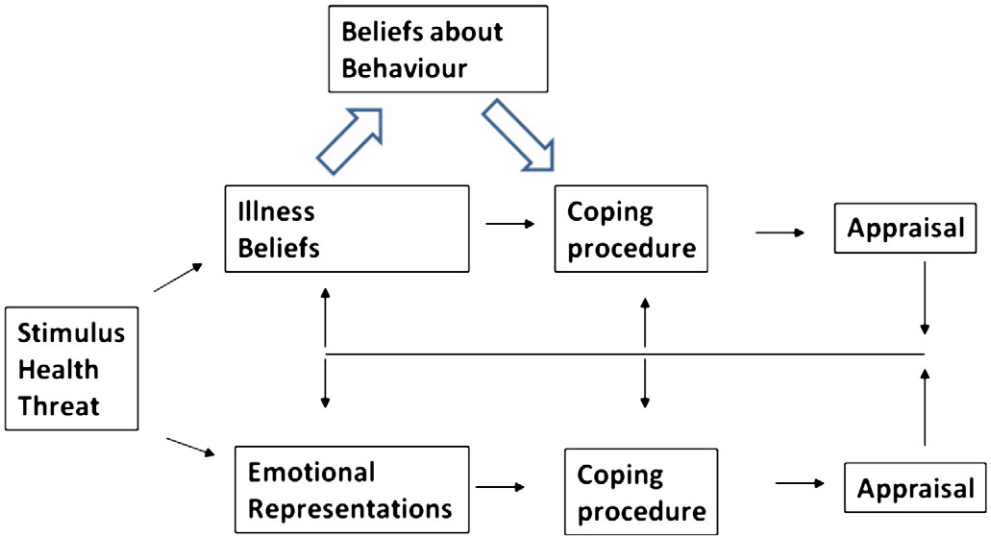

Fig. 1. A revised Common Sense Model to be used to design or evaluate behaviour change interventions, "extended" to incorporate beliefs about behaviour as well as beliefs about illness (following Horne, 2003).