Contents lists available at ScienceDirect

Primary Care Diabetes

journal homepage: http://www.elsevier.com/locate/pcd

Original research

Explaining psychological insulin resistance in adults with non-insulin-treated type 2 diabetes: The roles of diabetes distress and current medication concerns. Results from Diabetes MILES—Australia

E. Holmes-Truscott[a,b,*], T.C. Skinner[c], F. Pouwer[d], J. Speight[a,b,e]

[a] The Australian Centre for Behavioural Research in Diabetes, Diabetes Victoria, 570 Elizabeth Street, Melbourne 3000, VIC, Australia
[b] School of Psychology, Deakin University, 221 Burwood Highway, Burwood 3125, VIC, Australia
[c] School of Psychological and Clinical Sciences, Charles Darwin University, Darwin, 0909 Northern Territory, Australia
[d] Department of Medical and Clinical Psychology, Centre of Research on Psychology in Somatic diseases (CoRPS), Tilburg University, postbus 90153, 5000 LE Tilburg, The Netherlands
[e] AHP Research, 16 Walden Way, Hornchurch RM11 2LB, United Kingdom

ARTICLE INFO

Article history:
Received 24 November 2014
Received in revised form 1 June 2015
Accepted 11 June 2015
Available online 3 July 2015

Keywords:
Type 2 diabetes
Psychological insulin resistance
Beliefs about medications
Diabetes distress

ABSTRACT

Aims: To investigate the contribution of general and diabetes-specific emotional wellbeing and beliefs about medicines in the prediction of insulin therapy appraisals in adults with non-insulin-treated type 2 diabetes.

Methods: The sample included Diabetes MILES–Australia cross-sectional survey participants whose primary diabetes treatment was oral hypoglycaemic agents (N = 313; 49% women; mean ± SD age: 57 ± 9 years; diabetes duration: 7 ± 6 years). They completed validated measures of beliefs about the 'harm' and 'overuse' of medications in general (BMQ General); 'concerns' about and 'necessity' of current diabetes medications (BMQ Specific); negative insulin therapy appraisals (ITAS); depression (PHQ-9); anxiety (GAD-7), and diabetes distress (DDS-17). Factors associated with ITAS Negative scores were examined using hierarchical multiple regressions.

* *Corresponding author at*: The Australian Centre for Behavioural Research in Diabetes, 570 Elizabeth Street, Melbourne, Vic 3000, Australia. Tel.: +61 3 8648 1861.
E-mail addresses: etruscott@acbrd.org.au (E. Holmes-Truscott), timothy.skinner@cdu.edu.au (T.C. Skinner), F.Pouwer@uvt.nl (F. Pouwer), jspeight@acbrd.org.au (J. Speight).

http://dx.doi.org/10.1016/j.pcd.2015.06.006

Results: Twenty-two percent of the variance in ITAS Negative scores (52 ± 10), was explained by: number of complications ($\beta = -.15$, $p = .005$), DDS-17 subscale 'emotional burden' ($\beta = .23$, $p < .001$), and 'concerns' about current diabetes treatment ($\beta = .29$, $p < .001$). General beliefs about medications and general emotional wellbeing did not contribute significantly to the model.

Conclusions: Psychological insulin resistance may reflect broader distress about diabetes and concerns about its treatment but not general beliefs about medicines, depression or anxiety. Reducing diabetes distress and current treatment concerns may improve attitudes towards insulin as a potential therapeutic option.

1. Introduction

Despite its proven efficacy among people with progressed type 2 diabetes mellitus (T2DM) [1,2], insulin therapy seems less popular than oral medication. Approximately one quarter of adults with non-insulin-treated T2DM refuse, or report being unwilling to begin, insulin [2–4]. In the UKPDS, for example, 27% of the participants who were prescribed insulin therapy initially refused this form of therapy, compared to 7–13% in the tablet-treated group [5]. In Australia, around 23% of adults with T2DM are currently using insulin to manage their diabetes [6], despite reports that the mean HbA_{1c} of adults with T2DM overall is 8.0% (64 mmol/mol) [7]. Similar results have been found internationally [8–12]. Notwithstanding individual factors and individualised glycaemic targets that cannot be extricated in aggregated national datasets, these data suggest a failure to intensify treatment, e.g., timely insulin initiation, which may be due to the reluctance of the health professional (i.e., clinical inertia [10]) and/or the person with T2DM.

People with T2DM may delay insulin initiation for many reasons, ranging from concerns about the perceived complexity of insulin therapy, to the belief that one has failed if insulin needs to be prescribed. The cluster of negative appraisals of insulin therapy is known as "psychological insulin resistance" [3,13]. Understanding the factors associated with negative attitudes toward insulin therapy can inform strategies to improve attitudes towards, and uptake of, insulin among people with T2DM.

Previous research has revealed an association between negative appraisals of insulin therapy and impaired emotional wellbeing, including depressive symptoms and diabetes distress [14–17]. In particular, diabetes distress has been shown to account for a greater proportion of the variance in insulin therapy appraisals than depressive symptoms [15]. While other studies have also observed a moderate, positive relationship between insulin therapy appraisals and diabetes distress [13,17], it is unclear whether overall diabetes distress or specific components (e.g., regimen-related, physician-related, interpersonal distress) underlie negative insulin therapy appraisals.

In a small longitudinal study, no change in anxiety scores from baseline to follow-up was observed for participants initiating insulin, nor was there any difference in baseline scores between those who initiated insulin and those who did not [14]. Other research has noted a relationship between increased injection-related anxiety (a component of psychological insulin resistance) and increased general anxiety and diabetes distress [18,19]. However, the association between anxiety and negative insulin therapy appraisals has not been investigated explicitly.

In an international study, participants with non-insulin treated T2DM who reported being hypothetically unwilling to begin insulin displayed increased diabetes distress and more negative beliefs about current oral medications than those who reported willingness to begin insulin if recommended [13]. However, in that particular study, the (unvalidated) single items used to measure beliefs about current oral medications did not specify whether the medications were for the management of diabetes or other purposes. Horne et al. [20] suggest that people hold beliefs about medicines in general, as well as beliefs about medications specific to their condition (e.g., T2DM). Further, beliefs about medicines in general are likely to influence an individual's initial orientation towards medicines (e.g., willingness to begin medication), but condition-specific beliefs about medications are more likely to influence medication-taking behaviour (e.g., uptake and continuation of therapy as recommended) [21]. Thus, exploration of whether insulin therapy appraisals are associated with broader concerns about medicines in general and/or negative attitudes towards current diabetes-specific medications is required.

Our aim was to investigate the contribution of impaired emotional wellbeing and beliefs about medications (both in general and diabetes-related) to negative appraisals of insulin therapy among adults with non-insulin-treated T2DM.

2. Participants, materials and methods

This study used data from Diabetes MILES—Australia 2011, a national cross-sectional survey of adults with diabetes, focused on psychological and behavioural issues. A detailed description of the methods and questionnaires has been published elsewhere [22]. The study received ethics approval from the Deakin University Human Research Ethics committee (reference number: 2011-046).

2.1. *Participants*

Surveys were posted to a random sample of 15,000 National Diabetes Services Scheme registrants, and an online version was made available and advertised nationally. Overall, 3338 eligible respondents took part (response rate = 18% [22]), of