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Changes in illness-related cognitions rather than distress mediate improvements in irritable bowel syndrome (IBS) symptoms and disability following a brief cognitive behavioural therapy intervention

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ABSTRACT

Objective: A previous randomised controlled trial demonstrated that a cognitive behavioural therapy (CBT) self-management intervention significantly improved irritable bowel syndrome (IBS) symptoms and disability compared to treatment as usual (TAU). The current study analysed additional data to establish whether; 1) cognitive, behavioural and emotional factors hypothesized to perpetuate IBS symptoms and disability changed following CBT and, 2) ascertain if changes in these factors over the intervention period mediated treatment effects 6-months later.

Method: IBS patients (CBT = 31, TAU = 33) completed measures pre-and-post intervention including: Brief Illness Perception Questionnaire, Hospital Anxiety & Depression Scale and Cognitive and Behavioural Responses to Symptoms Questionnaire. Path models were evaluated to determine whether changes in cognitive and behavioural factors over the treatment period mediated treatment effects.

Results: Compared to TAU, CBT patients showed significant positive changes on several cognitive variables but not anxiety and depression following intervention. Positive change in illness perceptions following intervention mediated the treatment effect on improved IBS symptom severity and social adjustment six months later. Changes in damaging beliefs mediated the effect on social adjustment.

Conclusions: Change in cognition rather than mood mediated treatment related improvements. Changing negative perceptions of IBS appears to be a particularly important treatment mechanism.

Introduction

Irritable bowel syndrome (IBS) is a prevalent chronic condition affecting around 10–20% of the population. It is associated with significant morbidity including impaired quality of life, depression and anxiety symptoms (Drossman et al., 1999; Levy et al., 2006). Whilst IBS is not associated with mortality (Owens, Nelson, & Talley, 1995) it significantly impacts upon direct and indirect health care costs (Akehurst et al., 2002).

Psychological therapies have shown to be efficacious in reducing IBS related symptoms, including gastrointestinal symptoms (GI), psychological distress and quality of life (Creed et al., 2003; Lackner et al., 2006, Lackner, Mesmer, Morley, Dowzer & Hamilton, 2004). Cognitive Behavioural Therapies (CBT) have shown to be particularly effective in improving IBS related outcomes (Blanchard et al., 2007; Greene & Blanchard, 1994; Kennedy et al., 2005; Moss-Morris, McAlpine, Didsbury, & Spence, 2010; Payne & Blanchard, 1995; van Dulmen, Fennis, & Bleijenberg, 1996).

Quite how CBT leads to improved IBS outcomes remains less clear, with only a few studies examining mediators of change (Lackner et al., 2007; Reme et al., 2011). One argument is that CBT exerts treatment effects via improvements in psychological distress (Jones, Koloski, Boyce, & Talley, 2011). However, other evidence suggests that CBT has a direct effect on improved GI symptoms that in turn may lead to reductions in psychological distress (Lackner et al., 2007). Other studies of symptom-based disorders suggest that physical symptoms are more responsive to change following CBT than psychological distress (Kroenke & Swindle, 2000). A recent study found that a reduction in maladaptive behaviours and negative cognitions mediated the effect of CBT on improved IBS related outcomes i.e. decreased IBS symptom severity and disability (Reme et al., 2011). This study reported that mediation occurred first through changes in behaviour, then changes in cognition before impacting upon treatment outcome. However, this study used simultaneous assessments of process (mediator) and outcome

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variables, a method which is not ideal since to infer causality, mediators should precede in time the outcome variables (Kazdin, 2007).

The present paper explored potential cognitive and behavioural mediators of change following a relatively brief CBT based self-management intervention for IBS, using additional trial data from Moss-Morris et al. (2010). This short intervention was based on an empirical cognitive behavioural model of IBS (Spence & Moss-Morris, 2007) and demonstrated efficacy for improving IBS symptoms and social adjustment up to six months post treatment (Moss-Morris et al., 2010). The aims of the current study were to, 1) evaluate whether CBT altered cognitive, behavioural and emotional factors hypothesized to perpetuate IBS symptoms and disability 2) establish if proximal changes in these factors over the 2-month intervention period mediate the positive treatment effects of CBT 6 months later and 3) to ascertain if changes in cognition and behaviour, rather than mood, mediated improvement.

Method

Patients

A full description of the original RCT, patient characteristics and study attrition rates are presented elsewhere (Moss-Morris et al., 2010). In the RCT, 64 IBS patients meeting Rome criteria (Thompson, 1999; Thompson et al., 1999) were randomized to receive either a CBT based self-management intervention plus treatment as usual (CBT, $n = 31$) or just treatment as usual (TAU, $n = 33$). In both groups 73% were female, with the majority having European ethnicity (CBT = 90%, TAU = 97%). The mean age of the CBT group was 40 (±18) years and 39 (±15.9) years in the TAU group. Both groups had similar pre-treatment IBS symptom severity scores (CBT = 228.5 vs. TAU = 222.8, $p = 0.85$).

Interventions

TAU patients received an IBS fact sheet, which included information on how IBS is diagnosed. The CBT group also received this fact sheet and a comprehensive self-help manual divided into seven chapters to be completed over a 7–8 week period. CBT patients also received a one-hour face-to-face session with a health psychologist (see Moss-Morris et al., 2010 for details).

Instruments and assessment procedures

Irritable bowel syndrome severity scoring system (IBS-SSS)

The IBS-SSS (Francis, Morris, & Whorwell, 1997) was the primary outcome variable, which measures the severity of bowel dysfunction, pain, and distension. The maximum achievable score on the IBS-SS is 500, with a decrease of 50 points on the scale being identified as a clinically significant improvement in symptom severity.

Work and social adjustment scale (WSAS)

WSAS (Mundt, Marks, Shear, & Greist, 2002) was the secondary outcome variable of interest. The WSAS is a valid and reliable self-report scale of functional impairment attributable to an identified problem (in this case IBS). The scale consists of five items that correspond to impairment in work, home management, social activities, private leisure activities and relationships. High scores indicate greater impairment.

Mood

The Hospital Anxiety and Depression Scale (HADS) is a widely used self-report instrument for assessing depression and anxiety in patients with medical illnesses (Zigmond & Snaith, 1983). It has two subscales, anxiety and depression, each consisting of seven items.

Outcomes were assessed at baseline (pre-treatment), immediately post treatment (2 months) and at 5 and 8 months follow-up. Assessments were sent out and processed by a research assistant blind to treatment condition. Participants provided information at baseline on their gender, duration of bowel symptoms, age, ethnicity, marital status and level of education.

Potential mediator variables

Brief Illness Perception Questionnaire (B-IPQ)

The B-IPQ (Broadbent, Petrie, Main, & Weinman, 2006) was used to assess illness perceptions surrounding patients IBS. Seven items measured beliefs about IBS on different dimensions scored on a Likert scale from 0 (not at all) to 10 (extremely) including, *Consequences* ("how much do your bowel symptoms affect your life"), *Timeline* ("how long do you think your bowel symptoms will last"), *Personal Control* ("how much control do you feel you have over your bowel symptoms"), *Treatment Control* ("How much do you think a self-help treatment can help your bowel symptoms"), *Illness Coherence* ("how well do you understand your bowel problem"), *Concern* ("how concerned are you about your bowel symptoms") and *Emotional Representation* ("how much do your bowel symptoms affect you emotionally"). Frequency of experiencing IBS symptoms was removed since it overlapped with the outcome measure (IBS-SSS). As used in previous studies (Knoop, van Kessel, & Moss-Morris, 2012), a sum score was calculated for the B-IPQ (with *Timeline*, *Consequences*, *Concern and Emotional* items recoded such that lower sum scores indicated a more negative, unhelpful illness representation of IBS and higher scores a more positive representation). This method was preferred here to avoid examining individual items using multiple tests and thus increasing type 1 error.

Cognitive and Behavioural Responses to Symptoms Questionnaire (CBSQ)

As in previous studies, the CBSQ was used to measure patients' cognitive and behavioural responses to their symptoms (Knoop et al., 2012; Skerrett & Moss-Morris, 2006). The scale includes five cognitive subscales; fear avoidance, embarrassment avoidance, catastrophising about symptoms, beliefs that symptoms signal damage to the body (damage beliefs), and symptom focus. There are also two behavioural subscales; resting and avoidance of activity and all-or-nothing behaviour.

Causal symptom attribution

Attributions about causes of the symptoms were measured using a single item "Which best describes the nature of your symptoms?" rated on a 5 point scale; [1 = physical, 2 = mainly physical, 3 = physical and psychological, 4 = mainly psychological, 5 = psychological] (Skerrett & Moss-Morris, 2006).

Of the potential mediators, symptom attribution and CBSQ were measured pre and post treatment (2 months). The BIPQ was assessed pre and post treatment and also at 5 and 8 months follow-up (i.e. 6 months post treatment). Negative change scores on the CBSQ reflect a reduction in the unhelpful beliefs and behaviours. Positive change scores on symptom attribution reflect a change towards a bio-psychological or psychological explanation for symptoms, and on B-IPQ reflect more positive beliefs about IBS.