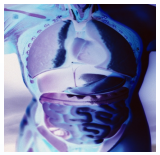
Illness perceptions in irritable bowel syndrome: change over time and relationship with self-reported quality of life



Illness perceptions in Irritable Bowel Syndrome: Change over time and relationship with self-reported quality of life

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1. BACKGROUND

•Irritable Bowel Syndrome (IBS) is a chronic Functional Gastrointestinal Disorder (FGID) with undetermined aetiology (Tanaka et al., 2011). Western prevalence is estimated at 7-20% (Andrews et al., 2005; Grundman & Yoon, 2010) with female predominance in healthcare seeking (Andrews et al., 2005). The negative impact of IBS is wide ranging in terms of self-reported quality of life (QOL) (e.g. Lea & Whorwell, 2001), emotional distress (Tanaka et al., 2011) and use of health care services and workplace productivity (Wilson et al., 2004).

•Conventional medical treatment is rarely successful and up to half of those affected use complementary and alternative medicine (CAM) (Kong et al., 2005). CAM-users with FGIDs report poorer QOL despite using CAM (van Tilburg et al., 2008) which raises the issue of efficacy of CAM treatments (Ford et al., 2008). Conversely, psychological interventions have positively impacted on reported quality of life (e.g. Jarret et al., 2009). Establishing distinct areas where psychological intervention could take place would therefore potentially be beneficial. The common-sense model of illness representations (CSM, Leventhal et al., 2003) posits that illness perceptions influence outcomes via coping procedures. Illness perceptions are then 'updated' on appraisal of coping procedures. Interventions based on the CSM have resulted in promising outcomes (e.g. Broadbent et al., 2009).

•**AIMS**: Within the theoretical framework of an 'extended' CSM (e.g. Horne & Weinman, 2002) the aims of the study were: 1) to test for changes in illness perceptions and QOL over time; 2) to statistically examine pathways within an extended CSM between CAM-users and non-users over time and 3) to test for statistical significance of any detected mediation effects over time.

2. METHOD

Design and procedure: Participant responses were captured via an online survey at two time points. Participants completed time-two responses after a minimum of six months.

Participants: N=197 participants completed the survey (UK residents 87.3%). The age range was 18-76 with the mean age for males: 40.42 (*SD*=13.13) years and females 38.13 years (*SD*=12.93). 125 (63.5%) participants indicated they were CAM-users, 72 had not used CAM (non-users).

Measures: Dimensions of an 'extended' CSM were captured: Illness perceptions (**IPQ-R**, Moss-Morris et al., 2002); Conventional medication beliefs (**BMQ**-General scale, Horne et al., 1999); Coping (**Brief-COPE**, Carver, 1997). Outcome/Quality of life, **IBS-QOL** (Patrick et al., 1998). CAM-use was determined by asking if CAM had ever been used to treat IBS.

Statistical Analysis: Related t-tests were conducted to assess differences in representations and IBS-QOL scores between the two time-points. Regression analyses (figure 1) tested for relationships between IPQ-R, Brief-COPE and IBS-QOL scores. Significance testing was conducted for mediation effects (Preacher & Hayes, 2004). Participants were grouped according to CAM use (CAM-users and non-users).

Table 1: IPQ-R scale and overall IBS-QOL score differences over two study time-points in CAM-users and non-users

Variable	CAM use	Mean (SD) time 1		Mean (SD) time 2		t-value
Identity	No (*n*=69)	6.09	(2.62)	5.28	(2.57)	**2.11***
	Yes (n=118)	6.00	(2.41)	5.56	(2.41)	1.64
Consequences	No	21.25	(4.19)	20.57	(5.15)	1.47
	Yes	22.04	(4.16)	21.37	(4.33)	**2.10***
Personal control	No	18.79	(4.43)	19.92	(4.52)	**-2.19***
	Yes	20.19	(4.48)	20.68	(4.56)	-1.27
Emotional representations	No	21.59	(5.23)	20.12	(5.65)	**2.60***
	Yes	22.56	(4.63)	21.30	(4.85)	**3.33****
Total IBS-QOL Score	No (n=72)	49.51	(21.73)	55.23	(21.49)	**-3.31****
	Yes (n=125)	45.89	(19.81)	53.05	(19.70)	**-5.97*****

* *p*<.05 **p<.01 *** *p*<.001

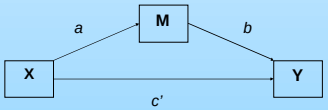
3. RESULTS

Aim 1: Both groups showed improved quality of life ratings (CAM-users: *t*(124)= -5.97, *p*<.001; non-users: *t*(71)= -3.31, *p*<.01) and significantly lower emotional representations at time-two (CAM-users: *t*(117)= 3.33, *p*<.01; non-users: *t*(68)= 2.60, *p*<.05) (table 1). There were small but significant improvements on the IPQ-R identity and personal control scale in non-users. CAM-users perceptions of consequences also improved at time two.

Aim 2: Numerous IPQ-R scales predicted IBS-QOL scores at time two (table 2). Stronger perceptions of illness consequences CAM-users: *Beta*=-.67, *p*<.001; non-users: *Beta*=-.62, *p*<.001) and emotional representations at time-one (CAM-users: *Beta*=-.58; non-users: *Beta*=-.51, *p*<.001) predicted poorer quality of life at time-two in both groups.

Aim 3: Mediation tests (table 3) revealed that the Brief-COPE scales of 'self blame' and 'behavioural disengagement' mediated pathways from IPQ-R scales to IBS-QOL scores in the CAM-user group only.

Figure 1: Visual representation of 'simple' Mediation



X directly influences Y (pathway c') and indirectly through the Mediator (M). Coefficient c' is reduced in size when M is included in the model and this reduction is tested for being significantly different from zero. Adapted from Preacher and Hayes (2004).

Table 2: Beta coefficients (and R^2 percentages) for IPQ-R scales (time one) influence on IBS-QOL total score (time two) for CAM-users and non-users

IPQ-R scales (time one)	Non-users: IBS-QOL time two total score (n=72)	CAM-users: IBS-QOL time two total score (n=123)
Timeline chronic	**-.45*** (20.25%)**	**-.24** (5.76)**
Consequences	**-.62*** (38.44%)**	**-.67*** (44.89%)**
Personal control	**.45*** (20.25%)**	**.25** (6.25%)**
Treatment control	**.28* (7.84%)**	**.32** (10.24%)**
Emotional representations	**-.51*** (26.01)**	**-.58*** (33.64%)**
External cause	-.15 (2.25%)	**-.18* (3.24%)**

* *p*<.05 **p<.01 *** *p*<.001

Table 3: Mediation tests for IPQ-R scales at time one and outcome (time two IBS-QOL scores) at time two for CAM-users

1)Predictor variable (IPQ-R) 2)Potential mediator (Brief-COPE scale)	Adjusted R^2 (R^2 change)	Beta Coefficients (Predictor without mediator)	Mediation effect (z) (Sobel estimate and Confidence interval)	R^2 % for mediation effect (% of total R^2)
1) Timeline chronic 2) Behavioural disengagement *F*(2,122)= 20.34***	.24 (.19)	-.13ns (-.24**) -.45***	-2.56* (-.59, 99%CI= -1.23, -.03)	4.34 (18.08)
1) Illness consequences 2) Behavioural disengagement *F*(2,122)= 73.31***	.54 (.10)	-.58*** (-.67***) -.33***	-2.64** (-.40, 99%CI= -.84, -.04)	13.57 (25.13)
1) Illness consequences 2) Self blame *F*(2,122)= 63.14***	.50 (.06)	-.60*** (-.67***) -.26***	-2.48* (-.34, 99%CI= -.87, -.04)	12.25 (24.5)
1) Personal control 2) Behavioural disengagement *F*(2,122)= 20.49***	.24 (.18)	.14ns (.27***) -.45***	2.82** (.57, 99%CI= .08, .1.17)	5.34 (22.25)
1) Treatment control 2) Behavioural disengagement *F*(2,122)= 21.82***	.25 (.16)	.18* (.32***) -.43***	2.99** (.69, 99%CI= .21, 1.30)	7.07 (28.28)
1) Emotional representations 2) Behavioural disengagement *F*(2,122)= 51.86***	.45 (.13)	-.49*** (-.58***) -.37***	-2.37* (-.37, 99%CI= -.79, -.03)	10.57 (23.49)
1) Emotional representations 2) Self blame *F*(2,122)= 46.05***	.42 (.10)	-.51*** (-.58***) -.32***	-2.08* (-.30, 95%CI= -.63, -.05)	8.46 (20.14)
1) External cause 2) Self blame *F*(2,122)= 14.75***	.18 (.16)	-.11ns (-.19*) -.41***	-2.06* (-.44, 99%CI= -1.03, -.01)	2.5 (13.89)

* *p*<.05 **p<.01 *** *p*<.001

4. CONCLUSIONS

•Findings offer some statistical support for supposition of the CSM, however not all IPQ-R scales significantly changed over time. There were also small but statistically significant contribution of maladaptive coping strategies 'behavioural disengagement' and 'self blame'.

•CAM-users reported poorer QOL and this was consistent over time despite improvement in both groups at time two.

•Intervention could be targeted at perceptions of consequences, emotional response and enhancing control in those with IBS. It is possible CAM-users may gain the greatest benefit from intervention.

•Future studies could investigate the feedback loop of CSM with reference to 'updating' of illness representations. This could involve participant 'subgroups' (e.g. newly diagnosed with IBS) or IBS subtypes and users of different forms of CAM.