

# Hypnotherapy for irritable bowel syndrome: an audit of one thousand adult patients

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## SUMMARY

### Background

Gut-focused hypnotherapy improves the symptoms of irritable bowel syndrome (IBS) with benefits being sustained for many years. Despite this, the technique has not been widely adopted by healthcare systems, possibly due to relatively small numbers in published studies and uncertainty about how it should be provided.

### Aim

To review the effect of hypnotherapy in a large cohort of refractory IBS patients.

### Methods

One thousand IBS patients fulfilling Rome II criteria, mean age 51.6 years (range 17–91 years), 80% female, receiving 12 sessions of hypnotherapy over 3 months, were studied. The primary outcome was a 50 point reduction in the IBS Symptom Severity Score. The fall in scores for Noncolonic Symptoms, Quality of Life and Anxiety or Depression, were secondary outcomes. The Federal Drug Administration's recommended outcome of a 30% or more reduction in abdominal pain was also recorded.

### Results

Overall, 76% met the primary outcome which was higher in females (females: 80%, males: 62%,  $P < 0.001$ ) and those with anxiety (anxious: 79%, non-anxious: 71%,  $P = 0.010$ ). The mean reduction in other scores was: IBS Symptom Severity Score, 129 points ( $P < 0.001$ ), Noncolonic Symptom Score, 65 ( $P < 0.001$ ) and Quality of Life Score, 66 ( $P < 0.001$ ). Sixty-seven per cent reported a 30% or more reduction in abdominal pain scores. Pain days fell from 18 to 9 per month. Patients with anxiety and depression fell from 63% to 34% and 25% to 12% respectively ( $P < 0.001$ ). Outcome was unaffected by bowel habit subtype.

### Conclusion

These results provide further evidence that gut-focused hypnotherapy is an effective intervention for refractory IBS.

## INTRODUCTION

Irritable bowel syndrome (IBS) affects between 10% and 15% of the population<sup>1, 2</sup> with a substantial proportion of sufferers being adequately managed in primary care.<sup>3</sup> Other than for reasons of diagnostic uncertainty, one of the main drivers for referring patients with IBS to secondary or tertiary care is because of a failure to respond to the standard forms of treatment. Consequently, these individuals tend to have more severe symptoms and are frequently more challenging to manage as they have often tried dietary manipulation, anti-spasmodics, laxatives or anti-diarrhoeals where appropriate and anti-depressants, more commonly of the tricyclic variety.<sup>4</sup> The pain in this group of patients can be severe and faecal incontinence is not uncommon.<sup>5</sup> They also suffer from a range of noncolonic symptoms<sup>6</sup> such as, low backache, lethargy, nausea and bladder symptoms which further erodes their quality of life. In fact, the quality of life of these patients is poor<sup>7</sup> and has been shown to be worse than that experienced by patients with diabetes, end-stage renal disease or depression<sup>8</sup> and suicidal ideation is more common than that observed in inflammatory bowel disease.<sup>9</sup> Furthermore, these patients are notorious for placing a considerable burden on health-care resources.<sup>10–13</sup>

The therapeutic dilemma presented by this group of refractory patients not infrequently leads to a frustrating relationship between physician and patient that is not helped by further investigation which almost inevitably turns out to be 'normal'. Over the years, hypnosis has been shown to have some influence over a variety of gastrointestinal physiological processes, such as acid secretion,<sup>14</sup> gastric emptying,<sup>15</sup> colonic motility,<sup>16</sup> the gastrocolonic response to food<sup>17</sup> and visceral sensitivity.<sup>18</sup> These observations coupled with its ability to down-regulate the central processing of noxious stimuli from the periphery,<sup>19</sup> as well as reducing stress and anxiety suggest that hypnotherapy might have activity in gastrointestinal disorders, such as IBS, where function rather than structure is affected.<sup>20</sup> In 1984, we reported the results of a small clinical trial<sup>21</sup> which suggested that a gut-focused form of hypnotherapy can relieve many of the symptoms of IBS and this observation has been confirmed in a number of other studies<sup>22–30</sup> as well as further data from our Unit.<sup>31, 32</sup> Furthermore, it has also been shown that the beneficial effects of treatment are sustained in the long term<sup>33, 34</sup> and that this form of treatment is particularly effective in children,<sup>35, 36</sup> where again the effects are sustained over time.<sup>37</sup> An additional advantage of hypnotherapy for IBS is that as well as

improving gastrointestinal symptoms, it also reduces noncolonic symptoms,<sup>38</sup> anxiety or depression<sup>32</sup> and improves cognitive functioning.<sup>39</sup> Despite this encouraging evidence hypnotherapy is still not widely advocated for the treatment of IBS. This is probably because of a number of factors including continuing prejudice about the subject and the fact that it is impossible to perform a truly double-blind controlled trial of this modality, despite calls for such a trial to be undertaken.<sup>30</sup> In addition, there are no set protocols on how it should be delivered and the majority of trials have only included relatively small numbers. As a consequence of these methodological issues, it is unlikely that funding for a large-scale hypnotherapy trial is going to be forthcoming in the near future. It was, therefore, felt that as an alternative, an audit of a large cohort of recently treated patients, if positive, might help to facilitate the uptake of this form of treatment. This is important as it has the potential to offer some help to the considerable number of patients who are currently being told that nothing more can be done for their symptoms, which in some cases, are so severe that they can be driven to suicide.<sup>9</sup>

## MATERIALS AND METHODS

A group of 1000 consecutive patients (aged 17–91 years, mean age 51.6 years, 796 (80%) females, 204 (20%) males), with IBS refractory to conventional management strategies, treated in the Hypnotherapy Unit between January 2007 and July 2011 on whom pre- and post-hypnotherapy data were available, were studied and whose outcomes had not been previously reported anywhere. The audit could not be continued past 2011, because a large National Institute for Health Research study was initiated at this time which involved the majority of patients referred for hypnotherapy. All patients referred to the Unit are initially managed in the out-patient setting, where the diagnosis is confirmed and they are offered dietary manipulation as well as anti-spasmodics, anti-diarrhoeals or laxatives as appropriate and anti-depressants. Those patients failing to adequately respond to this approach are then considered for hypnotherapy. Consequently, many patients going through the hypnotherapy programme have discontinued conventional medication by the time they come to treatment, therefore, recording medication before and after treatment would be meaningless. However, as hypnotherapy is not regarded as a 'stand-alone' treatment, patients are allowed to continue with a medication if they feel it is having some effect. All patients fulfilled Rome II criteria<sup>40</sup> for IBS and any individuals with coexisting organic

gastrointestinal disease were excluded from the study, as were any individuals participating in any other research.

In addition to the usual demographical information, the following scores were obtained before and after hypnotherapy:

#### IBS Symptom Severity Score<sup>41</sup>

This score was the primary outcome measure and consists of five items (pain severity, pain frequency, abdominal bloating, bowel habit dissatisfaction, life interference) each scoring up to a maximum of 100, the sum of which allows patients to be classified as suffering from mild (<175), moderate (175–300) and severe (>300) IBS. A score of less than 75 includes 95% of a non-IBS population and would be regarded as indicating complete remission in a patient with IBS. To assess response to hypnotherapy in per cent terms, the proportion of patients achieving a 50-point or more reduction in symptom severity was calculated, as it has been shown that a 50-point reduction or more is indicative of clinically significant improvement.<sup>41</sup> Response rates for the more demanding endpoints of a reduction in score of 100 and 150 points were also calculated. The individual component scores of the IBS Symptom Severity Score (IBS SSS) were also documented. In addition, the pain frequency score, which for the purposes of the IBS SSS is recorded over 10 days, was multiplied by a factor of three to give an indication of the number of days with pain per month.

#### Noncolonic Symptom Score<sup>32</sup>

This consists of 10 items (nausea/vomiting, early satiety, headaches, backache, lethargy, excess wind, heartburn, urinary symptoms, thigh pain and aches and pains in muscles and joints (bodily aches), each scoring up to a maximum of 100, the sum of which is divided by two to give a maximum score of 500.

#### Quality of Life Score<sup>32</sup>

This consists of 15 items, which are scored on a 0–100 scale, with a higher score indicating a positive response to a particular question, which is the opposite to the other questionnaires. For instance, a positive response to 'how are you coping with problems' would be 'very well' whereas a positive response to 'how often do you worry' would be 'never'. The 15 components were as follows: coping with problems, confidence and security, quality of sleep, feelings of irritability, frequency of worrying, enjoyment of life, feelings of hopefulness, physical well-being, relationships with others, maintaining friendships,

feelings of inferiority, feeling wanted, feelings of helplessness, difficulty making decisions and enjoyment of leisure time. The sum of these 15 components was divided by three to give a maximum Quality of Life Score of 500.

#### Hospital Anxiety Depression Questionnaire<sup>42</sup>

This consists of seven anxiety and seven depression-related questions, each of which can be responded to on a 0–3 scale, giving a maximum score for either domain of 21. There is no single generally accepted cut-off score for the Hospital Anxiety Depression (HAD), although Zigmond and Snaith suggested 7/8 for possible and 10/11 for probable anxiety or depression<sup>42, 43</sup> and we have always chosen to use a value of 10 or above in all our previous studies. Some authors have suggested slightly lower cut-off values<sup>44</sup> but these have not been universally accepted. Consequently, to allow comparison with our previous work, we have continued to use a cut-off of 10 in this study. In addition to using a cut-off, we also quote the mean scores for anxiety and depression, as we have done in the past.

The Tellegen Absorption Scale (TAS)<sup>45</sup> was administered pre-hypnotherapy. This is a 34 item list of statements rated 'true' or 'false', for example, 'The crackle and flames of a wood fire stimulate my imagination', 'I can be deeply moved by a sunset' and 'I like to watch cloud shapes change in the sky'. The sum of the 'true' responses enables hypnotic ability to be scored as follows: high scoring between 26 and 34, medium between 16 and 25 or low scoring between 0 and 15 points.

The US Department of Health and Human Services Food and Drug Administration Centre for Drug Evaluation and Research (CDER) has recently suggested that a responder should be defined as an individual experiencing at least a 30% reduction in their pain score following treatment.<sup>46</sup> Consequently, the percentage of patients experiencing a reduction of 30% or more in their pain score and their total IBS Symptom Severity Score was calculated.

Patients were also divided into diarrhoea predominant, constipation predominant or alternating subgroups to enable comparison between patients with different bowel habits.

#### Procedure

Patients attended for up to a maximum of 12 one-hour sessions of gut-focused hypnotherapy<sup>20</sup> over a 3-month period. All sessions were conducted on a one-to-one basis, by a qualified hypnotherapist, who had at least

5 years experience of using the technique. Sessions were usually provided at weekly intervals with the IBS SSS,<sup>41</sup> noncolonic,<sup>32</sup> Quality of Life<sup>32</sup> and Hospital Anxiety and Depression (HAD) Scores<sup>42</sup> being completed before and after the course of treatment. Some patients did not complete a full course of treatment either because they reached what was considered a maximum response in a shorter period of time or because it was clear that treatment was not going to be successful. These patients also completed all the necessary questionnaires with the scores achieved at the time of cessation of treatment being carried forward as if they had completed all 12 sessions.

### Hypnotherapy

As a patient comes to the top of the waiting list they are allocated to the next available therapist who forms part of a team of five therapists who have received extensive training in both hypnotherapy and the gut-focused form of the technique. A gut-focused form of hypnotherapy, which has been described elsewhere,<sup>20</sup> was given to all patients and the way it is delivered has not changed significantly over the years. Briefly, this involves an initial consultation where the patient meets their therapist who takes a history and explains the concepts behind the gut-focused approach. This consists of a brief tutorial about the pathophysiology of IBS and how the various putative mechanisms that have been implicated can be influenced by either the use of imagery or tactile means. During the next two to three sessions, hypnotherapy is induced in a standard way by eye closure, progressive muscular relaxation and standard deepening techniques. As the course of treatment progresses, more and more emphasis is placed on controlling gut function, with the ultimate aim of enabling the patient to be 'in control of their gut' rather than the gut controlling them. The therapists are allowed some flexibility to alter their approach according to the patients' symptomatology but only 'superficial' psychological issues are addressed such as stress, anxiety and coping, as well as abnormal cognitions. More in depth psychological approaches are not allowed and age regression is forbidden. If a therapist feels that there is a problem with a significant psychiatric issue, they are instructed to discuss this with the head of department.

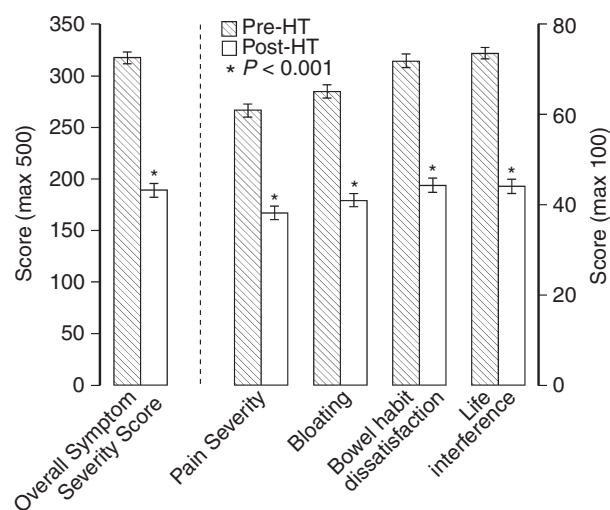
Hypnotherapists are recruited from individuals with a background in either nursing, social work or a biomedical science and, when they join the Unit, they are given specific training in gut-focused hypnotherapy. The performance of hypnotherapists is regularly monitored and their outcomes are compared with other members of the

team. Over the years, we have found very little variation in patient outcomes between the individual therapists and in this study there were no significant differences in the performance of the therapists.

### Statistical analysis

The statistical package SPSS 15 (SPSS Inc., Chicago, IL, USA) was used for the analysis of the data. The paired *t*-test was used to compare the pre-hypnotherapy and post-hypnotherapy results in relation to, for example, Symptom Severity, Noncolonic and Quality of Life Scores. These data were expressed as mean values and 95% confidence intervals in Figures 1–3. The two-sample '*t*' test was used to compare the IBS SSS scores between patients with and without HAD anxiety, as well as age (above and below 50 years) and the Wilcoxon signed-rank test was used to assess the nominal variable, the number of days experiencing pain (an item on the IBS SSS), pre- and post-hypnotherapy. In addition, the two-sample *t*-test and Pearson correlation was used to examine the effect of age as a continuous variable.

The data were also analysed using a one-way ANOVA in order to establish whether there was any relationship between the strength of association between the IBS SSS and the TAS (high, medium or low). Multiple comparisons were carried out using the Scheffé *Post hoc* test on the same data. Finally, an ANCOVA was used to identify



**Figure 1 | IBS Symptom Severity Scores before and after hypnotherapy for all 1000 patients. Maximum possible score 500 with a fall of 50 points or more being clinically significant. Data expressed as mean and 95% confidence intervals. \**P* < 0.001, compared with pre-hypnotherapy (pre-HT) score.**

significant independent predictors of IBS SSS in relation to age, gender, bowel habit subtype, HAD anxiety, HAD depression and hypnotisability.

Due to the number of statistical tests carried out on this cohort of patients, it is acknowledged that there is an increased risk of chance significant findings. Hence, only results with  $P < 0.005$  were considered as showing strong evidence of a significant difference.

### Ethical statement

All the questionnaires used in this study have been routinely used in our department for many years to monitor the progress of patients and their response to treatment. Consequently, as this was an audit of an ongoing clinical service, ethical review was not required.

### RESULTS

One thousand patients were studied of whom 967 (97%) were Caucasian. Two hundred and ninety-six (30%) patients had constipation predominant IBS (IBS-C), 256 (25%) diarrhoea predominant IBS (IBS-D) and 448 (45%) had an alternating bowel habit (IBS-alt). Seventy (7%) patients had mild IBS, 326 (33%) moderate and 604 (60%) severe IBS.

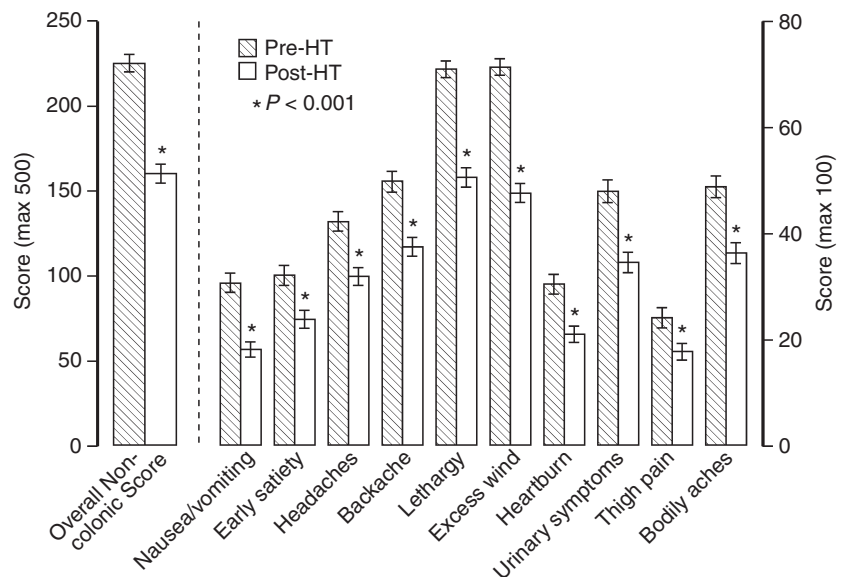
### Overall results

**IBS Symptom Severity Scores.** A total of 760 (76%) patients exhibited a 50-point or more reduction in their total score, which is regarded as being clinically significant.<sup>41</sup> Furthermore, using the more demanding end-points of 100- or 150-point reduction in the score, 58% and 42% of patients respectively, achieved this threshold.

Figure 1 shows the changes in the various components of the IBS SSS. There was a highly significant reduction in the scores for: pain severity (pre-HT 60.9 vs. post-HT 38.2,  $P < 0.001$ ), pain frequency (pre-HT 18 days vs. post-HT 9 days ( $P < 0.001$ ), abdominal bloating severity (pre-HT 65.1 vs. post-HT 40.9,  $P < 0.001$ ) dissatisfaction with bowel habit (pre-HT 71.9 vs. post-HT 44.3,  $P < 0.001$ ) and interference with life (pre-HT 73.6 vs. post-HT 44.0,  $P < 0.001$ ) with the total score falling from 317.8 to 189.0 [ $P < 0.001$ ; mean (95% CI) change 128.8 (122.3, 135.3)].

The number of days with pain per month for the group as a whole was 18 before and nine after treatment ( $P < 0.001$ ). There were no differences in the number of days with pain before and after treatment for females (18 vs. 9,  $P < 0.001$ ), males (18 vs. 9,  $P < 0.001$ ), constipation patients (19 vs. 9,  $P < 0.001$ ), diarrhoea (18 vs. 9,  $P < 0.001$ ) and alternators (18 vs. 9,  $P < 0.001$ ).

**Noncolonic Symptoms.** Figure 2 shows the results for the noncolonic symptomatology. There was a highly significant reduction in the total scores from a mean of 224.9 pre-HT to 160.1 post-HT [ $P < 0.001$ ; mean (95% CI) change 64.8 (60.3, 69.2)]. All of the components of the score were significantly reduced, namely: nausea/vomiting (pre-HT 30.8 vs. post-HT 18.2,  $P < 0.001$ ), early satiety (pre-HT 32.2 vs. post-HT 23.9,  $P < 0.001$ ), headaches (pre-HT 42.3 vs. post-HT 32.0,  $P < 0.001$ ), backache (pre-HT 49.9 vs. post-HT 37.6,  $P < 0.001$ ), lethargy (pre-HT 71.1 vs. post-HT 50.7,  $P < 0.001$ ), excess wind (pre-HT 71.5 vs. post-HT 47.7,  $P < 0.001$ ), heartburn (pre-HT 30.5 vs. post-HT 21.1,  $P < 0.001$ ), urinary symptoms (pre-HT



**Figure 2 | Noncolonic Symptom Scores before and after hypnotherapy for all 1000 patients. Maximum possible score 500 with a fall indicating an improvement. Data expressed as mean and 95% confidence intervals. \* $P < 0.001$  compared with pre-hypnotherapy (pre-HT) score.**



48.1 vs. 34.6,  $P < 0.001$ ), thigh pain (pre-HT 24.2 vs. post-HT 17.8,  $P < 0.001$ ) and aches and pains in muscles and joints (bodily aches) (pre-HT 48.9 vs. post-HT 36.4,  $P < 0.001$ ).

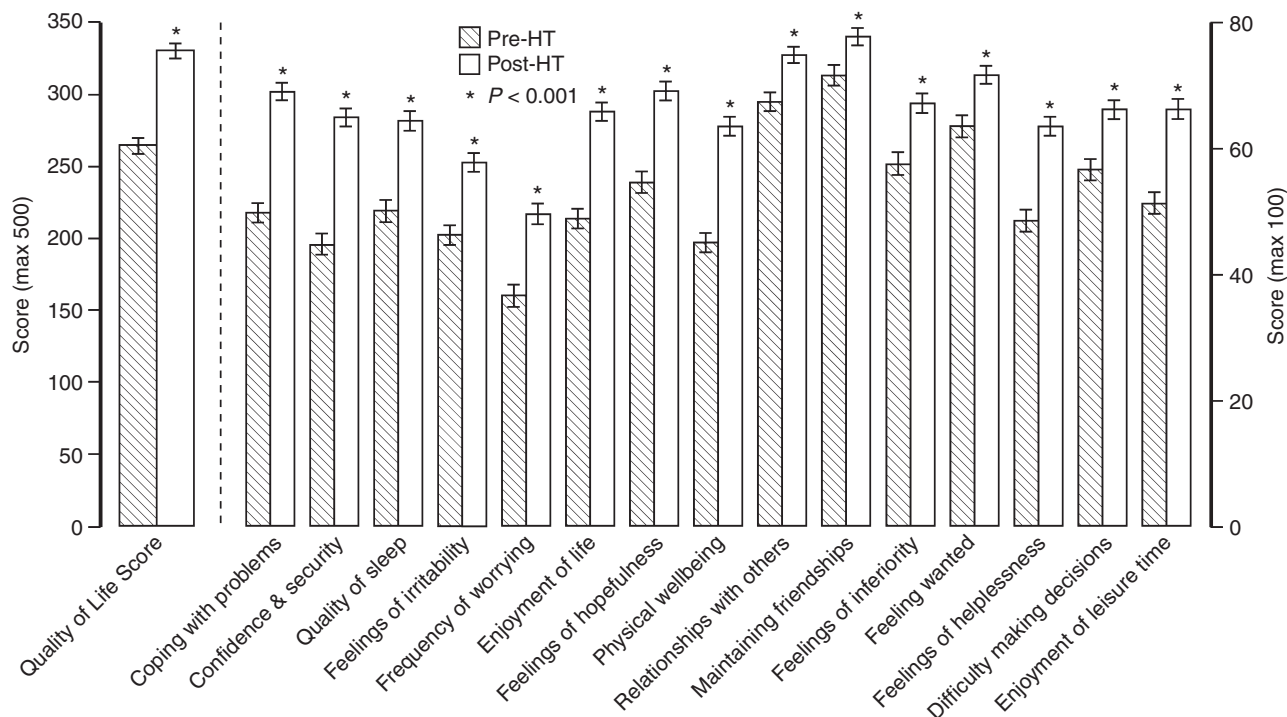
**Quality of Life.** Figure 3 details the results for the Quality of Life Scores, where there was a highly significant increase (improvement) in the total score from a mean of 264.60 pre-HT to 330.80 post-HT [ $P < 0.001$ ; mean (95% CI) change 66.1 (61.6, 70.6)]. All the components of the Quality of Life Score were significantly improved, namely: coping with problems (pre-HT 49.8 vs. post-HT 69.1,  $P < 0.001$ ), confidence and security (pre-HT 44.8 vs. post-HT 65.0,  $P < 0.001$ ), quality of sleep (pre-HT 50.1 vs. 64.4,  $P < 0.001$ ), feelings of irritability (pre-HT 46.3 vs. post-HT 57.8,  $P < 0.001$ ), frequency of worrying (pre-HT 36.7 vs. post-HT 49.6,  $P < 0.001$ ), enjoyment of life (pre-HT 48.9 vs. post-HT 65.9,  $P < 0.001$ ), feelings of hopefulness (pre-HT 54.7 vs. post-HT 69.2,  $P < 0.001$ ), physical wellbeing (pre-HT 45.1 vs. post-HT 63.6,  $P < 0.001$ ), relationships with others (pre-HT 67.5 vs. post-HT 74.9,  $P < 0.001$ ), maintaining friendships (pre-HT 71.7 vs. post-HT 77.8,  $P < 0.001$ ), feelings of inferiority (pre-HT 57.6 vs. post-HT 67.2,  $P < 0.001$ ), feeling wanted (pre-HT

63.6 vs. post-HT 71.7,  $P < 0.001$ ), feelings of helplessness (pre-HT 48.6 vs. post-HT 63.6,  $P < 0.001$ ), difficulty making decisions (pre-HT 56.7 vs. post-HT 66.2,  $P < 0.001$ ) and enjoyment of leisure time (pre-HT 51.4 vs. post-HT 66.3,  $P < 0.001$ ).

**HAD Scores.** Table 1 gives details of the HAD Anxiety and Depression scores before and after treatment with hypnotherapy. There was a significant reduction in the anxiety scores and the proportion of patients classified as anxious (scoring  $\geq 10$ ) after treatment. The same significant pattern of response was observed with respect to depression scores and the proportion of patients classified as depressed.

#### Separate effects of age, gender, bowel habit subtype, HAD Score and hypnotisability on outcome

**Age.** A 50-point reduction in the IBS SSS was achieved in 385 (78%) of patients aged 50 years or less compared with 375 (74%) of those over 50 years old ( $P = 0.26$ ). Using the more demanding endpoints of a 100 and 150-point reduction, the results for 50 years or less and over 50 respectively were 302 (61%) vs. 283 (56%)  $P = 0.14$  and 223 (45%) vs. 195 (39%)  $P = 0.052$ .



**Figure 3** | Quality of Life Scores before and after hypnotherapy for all 1000 patients. Maximum possible score 500 with higher score indicating best quality of life. Data expressed as mean and 95% confidence intervals. \* $P < 0.001$  compared with pre-hypnotherapy (pre-HT) score.

**Table 1 | Effect of Hypnotherapy on Anxiety and Depression:** using a cut-off score of 10 or more, the table shows the total number of patients with anxiety or depression before and after hypnotherapy as well as the number of females and males with anxiety and depression before and after treatment. In addition, mean anxiety and depression scores are also compared before and after treatment

	Pre-HT n (%)	Post-HT n (%)	Mean (95% CI) change	P value
No (%) patients with anxiety ( $\geq 10$ )	634 (63%) [F = 520 (65%) M = 114 (56%)]	342 (34%) [F = 284 (36%) M = 58 (28%)]		
Mean anxiety score	11.1	8.0	3.0 (2.8, 3.3)	<0.001
No (%) patients with depression ( $\geq 10$ )	255 (25%) [F = 199 (25%) M = 56 (27%)]	116 (12%) [F = 83 (10%) M = 33 (16%)]		
Mean depression score	7.0	4.6	2.5 (2.3, 2.7)	<0.001

The mean reduction in the IBS SSS was 138.2 (95% CI: 128.8, 147.5) for those patients under the age of 50 compared with 119.6 (95% CI: 110.6, 128.6) for those over the age of 50 (*t*-test; *P* = 0.005).

The reduction in Noncolonic Score was 69.8 (95% CI: 63.3, 76.2) for those under the age of 50 compared to 59.9 (95% CI: 53.6, 66.1) over the age of 50 (*t*-test; *P* = 0.030).

There were no significant differences with respect to age and a reduction in the Quality of Life Score, the HAD Anxiety Score and the HAD Depression Score.

When the effect of age on the change in IBS symptom severity following hypnotherapy was assessed as a continuum rather than as a cut-off of above or below 50, similar results were obtained. The mean age was 51.3 years for those patients with a 50-point or more reduction in IBS SSS compared with a mean age of 52.5 years for those with less than a 50-point reduction (*t*-test; *P* = 0.28). In addition, there was a very weak but statistically significant correlation between age and the change in symptom severity score (*r* = 0.08; *P* = 0.012), indicating that the younger the age the greater the reduction in score.

**Gender.** A 50-point reduction in the IBS SSS was achieved in 633 (80%) females compared with 127 (62%) males (*P* < 0.001). Using the more demanding endpoints of a 100 and 150-point reduction, the results for females and males respectively were 494 (62%) vs. 91 (45%) (*P* < 0.001) and 360 (45%) vs. 58 (28%), (*P* < 0.001).

Table 2 details the results in terms of actual scores for the various questionnaires according to gender. Both males and females exhibited a highly significant reduction in their Symptom Severity Scores as well as the scores for Noncolonic Symptoms, Quality of Life, HAD

Anxiety and Depression. However, the degree of improvement for all scores was greater in females compared with males.

**Bowel habit subtype.** A 50-point reduction in the IBS SSS in different bowel habit subtypes was achieved in 230 (78%) patients with constipation, 200 (78%) with diarrhoea and 330 (74%) with an alternating bowel habit. Using the more demanding endpoints of a 100 and 150-point reduction, the results for constipation, diarrhoea and alternators were 169 (57%) vs. 154 (60%) vs. 262 (58%) and 117 (40%) vs. 109 (43%) vs. 192 (43%) respectively.

Table 3 details the results in terms of scores for the various questionnaires according to bowel habit. All bowel habit subtypes experienced highly significant reductions in all the various questionnaires, with no significant differences in the degree of reduction in scores according to bowel habit.

**HAD Score.** Six hundred and thirty-four patients (63%) were classified as HAD anxious before treatment and a 50-point reduction in the IBS SSS was achieved in 499 (79%) of these individuals compared to 261 (71%) non-anxious patients (*P* = 0.010).

Two hundred and fifty-five patients (25%) were classified as HAD depressed before treatment and a 50-point reduction in the IBS SSS was achieved in 187 (73%) of these individuals, compared to 573 (77%) nondepressed patients (*P* = 0.28).

**TAS Score.** TAS Scores were only available on 486 patients and the mean score was 14.3 (s.d. = 7.4), range 0–33, with 31 (6%) patients being classified as high, 189 (39%) medium and 267 (55%) low. There was no signifi-

**Table 2 | A comparison of the response to hypnotherapy in males and females in terms of IBS Symptom Severity Score, Noncolonic Symptom Score, Quality of Life Score And Anxiety Or Depression Scores**

	Females (n = 796)				Males (n = 204)			
	Mean (s.d.)		Mean (95% CI) change	Paired t-test	Mean (s.d.)		Mean (95% CI) change	Paired t-test
	Pre	Post			Pre	Post		
Symptom Severity Score	322.9 (88.3)	186.0 (105.9)	137.0 (129.7, 144.2)	$P < 0.001$	297.7 (92.5)	200.6 (104.8)	97.1 (82.7, 111.4)	$P < 0.001$
Noncolonic Score	233.6 (82.6)	163.9 (90.0)	69.7 (64.6, 74.8)	$P < 0.001$	191.1 (75.7)	145.5 (74.8)	45.6 (37.1, 54.2)	$P < 0.001$
Quality of Life Score	238.6 (87.9)	167.1 (84.2)	71.5 (66.3, 76.7)	$P < 0.001$	222.8 (82.4)	177.8 (84.8)	45.0 (36.1, 53.8)	$P < 0.001$
HAD Anxiety Score	11.3 (4.3)	8.1 (4.1)	3.2 (2.9, 3.4)	$P < 0.001$	10.2 (4.1)	7.7 (3.8)	2.5 (2.1, 3.0)	$P < 0.001$
HAD Depression Score	7.0 (4.2)	4.4 (3.8)	2.6 (2.4, 2.9)	$P < 0.001$	7.2 (4.0)	5.3 (3.7)	1.9 (1.5, 2.3)	$P < 0.001$

**Table 3 | A comparison of the response to hypnotherapy in patients with various bowel habit subtypes in terms of IBS Symptom Severity Score, Non-colonic Symptom Score, Quality of Life Score and Anxiety or Depression Scores**

	Constipation (n = 296)				Diarrhoea (n = 256)				Alternating (n = 448)			
	Mean (s.d.)		Mean (95% CI) change	Paired t-test	Mean (s.d.)		Mean (95% CI) change	Paired t-test	Mean (s.d.)		Mean (95% CI) change	Paired t-test
	Pre	Post			Pre	Post			Pre	Post		
Symptom Severity Score	322.8 (88.9)	194.4 (109.1)	128.4 (116.2, 140.7)	$P < 0.001$	320.3 (92.0)	186.2 (103.5)	134.1 (121.8, 146.4)	$P < 0.001$	313.0 (88.9)	187.0 (105.0)	126.0 (116.2, 135.9)	$P < 0.001$
Noncolonic Score	221.2 (82.9)	159.6 (88.6)	61.6 (53.3, 69.9)	$P < 0.001$	222.7 (81.0)	158.4 (88.8)	64.3 (55.7, 73.0)	$P < 0.001$	228.6 (84.3)	161.5 (86.0)	67.1 (60.4, 73.9)	$P < 0.001$
Quality of Life Score	234.7 (88.4)	166.7 (84.3)	68.0 (59.7, 76.4)	$P < 0.001$	240.0 (83.3)	171.1 (84.9)	68.9 (60.6, 77.2)	$P < 0.001$	233.1 (88.2)	169.9 (84.4)	63.2 (56.1, 70.3)	$P < 0.001$
HAD Anxiety Score	10.8 (4.4)	7.8 (4.1)	2.9 (2.5, 3.4)	$P < 0.001$	11.3 (4.0)	8.2 (4.2)	3.1 (2.7, 3.6)	$P < 0.001$	11.2 (4.3)	8.1 (3.9)	3.1 (2.7, 3.4)	$P < 0.001$
HAD Depression Score	6.8 (4.1)	4.4 (3.8)	2.3 (1.9, 2.7)	$P < 0.001$	7.5 (3.9)	4.7 (3.6)	2.8 (2.4, 3.2)	$P < 0.001$	7.0 (4.4)	4.6 (3.8)	2.4 (2.0, 2.7)	$P < 0.001$

cant relationship between TAS scores and change in severity scores following hypnotherapy.

#### Combined effects of symptom severity, gender, bowel habit subtype, HAD Score and hypnotisability on outcome

It was found that the higher the anxiety score and the lower the depression score pre-hypnotherapy, the greater the reduction in the IBS SSS post-hypnotherapy ( $P = 0.002$  for anxiety and  $P < 0.001$  for depression). An additional observation was that females experienced a greater reduction in IBS SSS independent of anxiety or depression ( $P = 0.002$ ).

#### Percentage of patients experiencing a reduction in pain and total IBS Symptom Severity Score of at least 30%

Sixty-three per cent of patients experienced a 30% or more reduction in their symptom severity and 67% reported a 30% or more reduction in their abdominal pain scores.

#### DISCUSSION

The results of this audit confirm that 3 months of hypnotherapy led to a significant improvement in symptoms in this large group of refractory IBS patients, who were continuing to experience troubling symptoms despite multiple conventional interventions.



A 50-point reduction in the IBS SSS is regarded as clinically significant<sup>41</sup> and using this endpoint, 76% of patients experienced such an improvement. Even with the use of more exacting endpoints of a 100 or 150-point reduction, 58% and 42% of patients respectively fell into these categories. Importantly, 67% of patients experienced a 30% or more reduction in their pain scores which is the latest FDA's definition of a responder in IBS.<sup>46</sup> In addition, there was a significant improvement in each component of the IBS SSS (Figure 1) and all components of the Noncolonic Symptom and Quality of Life Scores (Figures 2 and 3). Anxiety and depression scores also fell significantly, as well as the proportion of patients being classified as having clinically significant anxiety or depression (scores of 10 or above).

The improvement in noncolonic symptomatology, such as lethargy and backache, is a particular bonus as patients often rank these symptoms as their most intrusive and they are notoriously difficult to treat.<sup>38, 47</sup> It is not clear why hypnotherapy should reduce noncolonic symptomatology, but it may in part be due to the fact that, as a more holistic approach, it results in the patient just feeling better and, therefore, coping more effectively with symptoms. Alternatively, some of these noncolonic symptoms, especially urinary frequency and urgency,<sup>48</sup> might result from increased visceral sensation and we have shown that hypnotherapy can reduce visceral hypersensitivity.<sup>18</sup> We have previously suggested that men with IBS do not respond quite so well to hypnotherapy, especially if they suffer from the diarrhoea subtype of the condition.<sup>32</sup> This study has also shown that men do not respond quite as well as women (62% vs. 80%), but this response is still encouraging when compared with that obtained with pharmacological approaches. In our previous audit<sup>32</sup>, it appeared that men with a loose bowel habit seemed to respond less but in this larger study, we could not identify any differences in the response in men between those with different bowel habit subtypes. We have previously suggested, in a rather small study, that older patients and those with depression may be less responsive to treatment with hypnotherapy.<sup>49</sup> We did not observe a reduced response in those with higher depression scores, although a significantly better response was observed in those with high anxiety scores and we have confirmed this in another study.<sup>50</sup> However, this study did confirm that older patients experienced a slightly lower reduction in the symptom severity score and this is possibly because they have had their IBS for longer and have, therefore, become more entrenched in their illness as opposed to children who seem to respond exceptionally well.<sup>35–37, 51</sup>

It might be anticipated that only excellent hypnotic subjects would respond to this form of treatment, which would be a major disadvantage as only approximately 5% of the population fall into this category. Fortunately, our results show that hypnotisability, as indirectly measured by the TAS, does not seem to affect outcome with low scorers responding equally well as those with high scores. This is clearly reassuring as 55% of the patients were classified as low and there is no reason to believe that they are not representative of the IBS population as a whole. In previous studies, we have attempted to find predictors for a good hypnotherapeutic outcome<sup>50, 52</sup> and, as in this study, have found female patients and those with higher anxiety levels respond better. In addition, we have demonstrated that if patients have a mental image of their illness or relate their mood to a positive colour,<sup>53</sup> they are also more likely to do well.<sup>50, 52</sup>

Despite the impressive results achieved in previous studies,<sup>22–24, 26–29, 36</sup> which have been confirmed by this audit, the uptake of hypnotherapy by health providers has been generally disappointing. This is probably partly due to the considerable number of misconceptions that surround the technique which lead to much prejudice and antagonism. This lack of understanding of the field leads to more 'legitimate' approaches, such as cognitive behavioural therapy and psychotherapy, often being more strongly advocated for the treatment of IBS, although the beneficial effects of hypnotherapy appear to be more sustained over time, which is not quite so clear cut for CBT.<sup>54, 55</sup> Furthermore, CBT and psychotherapy are viewed as primarily psychologically orientated modalities, whereas hypnotherapy combines this with strategies to actually exert control over physiological function for which there is good evidence in relation to the gastrointestinal system.<sup>20</sup>

At first sight, twelve sessions of hypnotherapy might seem to be an extremely expensive option for irritable bowel syndrome. However, refractory IBS is associated with severe symptoms with these patients becoming a considerable burden on healthcare resources<sup>11, 56</sup> with multiple consultations, repetitive investigation and even attendances at accident and emergency departments as well as hospital admissions.<sup>12</sup> Therefore, against this background hypnotherapy becomes eminently cost effective. However, we are currently carrying out research to establish the minimum number of sessions of treatment necessary to bring about a similar outcome to that we are currently achieving with twelve sessions, as if this can involve less sessions it would make this form of treatment more attractive to purchasers. Interestingly, we and others

have found that IBS patients and those with other functional gastrointestinal disorders, sometimes continue to improve after twelve weeks treatment.<sup>33, 34, 57, 58</sup>

We have previously shown that patients with severe refractory IBS have an extremely high level of suicidal ideation.<sup>9</sup> However, their mean depression scores were not especially high and it has been shown that hopelessness is a better predictor of suicide than depression.<sup>59</sup> Similarly, the mean depression scores in this audit were not outside the normal range and this is in accordance with previous studies from our unit. Anecdotally, a considerable number of patients treated in our Unit over the years have commented that they had been suicidal before treatment and that these thoughts had disappeared following their hypnotherapy.

The main limitations to this study are that it is an audit with no control group and there was no follow-up on this particular cohort of patients. However, the degree of improvement was comparable to that achieved in other controlled trials of hypnotherapy using similar outcome measures and considerably in excess of the average placebo response that is observed in pharmacological trials in IBS.<sup>60</sup> With regard to follow-up, we have previously reported that the benefits are sustained and this has been confirmed by others both in adults and children.<sup>33, 34, 37</sup>

There is little doubt that IBS is a multifactorial condition and consequently, it is not surprising that a multidimensional approach to the problem stands the best chance of bringing about an improvement. Consequently, hypnotherapy should be regarded as just one component of a package of measures rather than being a stand-alone treatment.<sup>61</sup> Therefore, conventional measures such as education, dietary manipulation and pharmacological approaches should be optimised before embarking on hypnotherapy to give it the best chance of bringing about significant improvement. During treatment some approaches, especially antidepressants, can sometimes be withdrawn although dietary restrictions usually have to remain in place. In addition, severe constipation sometimes requires the continued use of laxatives although in diarrhoea patients, the use of anti-diarrhoeals can often be reduced. Many patients view hypnotherapy as their last chance of achieving some relief from their symptoms and, therefore, it is important that realistic goals are set before treatment is commenced. The patient is told that they will be taught how to control their symptoms

rather than cure them and that practice is essential. Previously, we have noted that in all the functional gastrointestinal disorders we have studied,<sup>58, 62</sup> symptoms often continue to improve even when the course of hypnotherapy has finished and it is worth bringing this to the attention of patients, so that they can understand that it is not an instantaneous process. In addition, it gives them encouragement to continue practicing the technique when their course of treatment has been completed.

Hypnotherapy relieves a wide range of symptoms in patients with IBS as well as improving quality of life and mood. Consequently, more patients deserve to be offered the benefits of this form of treatment, which is completely safe and free from side effects.

## AUTHORSHIP

*Guarantor of the article:* PJW.

*Author contributions:* VM, HRC and PJW contributed to the conception and design of the study as well as the analysis and interpretation of the data. They also drafted the article and approved the final version. JM contributed to the design, analysis and critical revision of the article and approved the final version. SA and SSH contributed to data acquisition and critical revision of the article as well as approving the final version.

All authors approved the final version of the manuscript.

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