RESEARCH

A National Biofeedback Practitioners Service Evaluation: Focus on Chronic Idiopathic Constipation

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ABSTRACT

Introduction Within the UK, there is anecdotal evidence of disparity in the training, practice, supervision and perception of efficacy among practitioners of biofeedback therapy for chronic constipation.

Aims To establish the current knowledge, practice and opinions of UK practitioners.

Methods Between October 2012 and October 2013, a prospective service evaluation was distributed to biofeedback practitioners in the UK through academic conferences or by invitation to complete an on-line assessment form.

Results 76 practitioners responded, consisting of nurses (47%), physiotherapists (35%), physiologists (12%) and others (7%). Only 45% described 'biofeedback' consistent with an accepted definition. 86% use equipment to provide sensory feedback. Methods of biofeedback varied: balloon catheter (54%), brace pump technique (78%), urge resistance (83%), irrigation (16%) and relaxation (12%). Only 65% of practitioners had attended formal training courses, and 52% considered themselves to be self-taught. 36% receive formal supervision and only 38% of those by a senior. Regular audit of outcomes is undertaken by 67%. UK-wide perception of treatment response for chronic constipation is markedly variable (mean response=57% (IQR 50–75%, SD 23%)); there were no differences in perception of treatment response between nurses or physiotherapists. Practitioners' free responses demonstrated strong positive themes of a holistic approach and an overall perception of effectiveness. Negative themes included service restrictions.

Conclusions There is marked variation in practice, training and supervision of biofeedback therapists throughout the UK. Perceptions of efficacy vary greatly. Development of training and supervision standards is a priority as well as a consensus to standardise therapy.

SUMMARY

This original paper is the first evidence of UK biofeedback practitioners' opinion on therapy technique, training, supervision, practice, efficacy and experience in treating chronic idiopathic constipation (CIC).

BACKGROUND

Constipation is now accepted as a common condition throughout the world, and the most treatment refractory and chronic form of the disease causes prolonged suffering and increased health-care costs.¹ These patients who suffer from CIC will usually be offered bowel retraining±biofeedback as a second-line therapy after failure of laxatives and pro-motility agents. 'Bowel retraining' and 'biofeedback' are used interchangeably though biofeedback is just one component of this. Bowel retraining is a vague term used to describe attempts to improve patients' defecation and encompasses lifestyle and dietary changes, toilet routine and position and medical therapies such as biofeedback. There is no firm evidence from randomised controlled trials (RCTs) to support bowel retraining. The term 'biofeedback' has a specific definition. It is a therapy where the main objective is to help a patient become more aware and gain control of a physiological function through sensory stimulus to the brain.² The physiological function may be muscular or respiratory for example, and the sensory stimulus may be visual, auditory or tactile. Behavioural retraining of pelvic floor muscles for patients with functional colorectal disorders usually involves giving feedback through live visual electromyography (EMG) or manometry of pelvic floor muscular activity, or verbally by the

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practitioner who is observing manometric sphincter pressure or rectoanal pressure coordination.

Such methods of biofeedback have been widely used over the past two decades and are reported as highly effective for CIC.^{3–7} Biofeedback may improve gut transit, autonomic innervation and pelvic floor muscle relaxation/coordination.⁸ Instrumented biofeedback therapy as a specific treatment modality⁹ is the only form to have any evidence of efficacy in RCTs for CIC caused by dyssynergic defecation.¹⁰ However, a recent Cochrane review of overall evidence found it of insufficient quality to make firm conclusions on the efficacy and safety of biofeedback for CIC and dyssynergic defecation.¹¹

In the UK, there is anecdotal evidence of varying therapy techniques among practitioners, and of differing perceptions of efficacy among those practitioners undertaking the therapy, and the doctors (surgeons and gastroenterologists) who treat patients with CIC. There appears to be a disparity in the methods of biofeedback therapy, a lack of formal guidance and no professional body consensus or mandate to train, supervise and regulate practitioners. A national service evaluation was thus designed to describe practitioners' perceptions of the therapy for CIC in order to inform and help to construct national guidance.

METHODS

A prospective service evaluation consisting of 14 questions was designed to obtain both quantitative and qualitative data from practitioners. Questions asked practitioners to select methods of biofeedback used in their clinics, the type of training and supervision they received, along with how adequate they felt this was. Free text responses at the end of each question allowed participants the opportunity to report other options not available in the questionnaire. An efficacy question asked practitioners to select a point on a Visual Analogue Scale (VAS) from 0% to 100% the estimated efficacy of biofeedback therapy for CIC in their clinic. Participants were asked for simple demographics in the form of institution, occupation and seniority. A final free response question allowed for participants to report any other comments or issues they felt were important to the service evaluation. The survey was distributed between October 2012 and October 2013, and completed first through specialist UK national conferences on pelvic floor disorders and second through an on-line survey. A member of the team contacted 202 hospitals in the UK to obtain the details of biofeedback practitioners and circulate the invitation to complete the survey. Due to a poor initial response rate, a single prize of £50 in Amazon vouchers was offered in the second round of invitations to complete the on-line survey. Quantitative data were analysed in SPSS using appropriate statistical tests where necessary and qualitatively by thematic analysis.

RESULTS

Seventy-six responses were received in total from 36 separate institutions, and as individual item responses varied, percentages were calculated per item response. Sixty (79%) respondents revealed their primary occupation, of which the majority were nurses (n=28 (47%)) or physiotherapists (n=21 (35%)) and a smaller number of clinical physiologists (n=7 (12%)) or others (n=4 (7%)). Fifty-four (72%) revealed their location (see online supplementary table S4) within the UK. There was 1 foreign respondent (Jersey) included in the analysis due to proximity to the UK, 3 private practitioners, 2 non-specific NHS responses and 48 specified NHS respondents.

All respondents were invited to describe what 'biofeedback' meant to them, and 65 (86%) completed the free text answer. These were analysed according to a coding system that required both components to be present in the free response for the answer to be coded as similar to the accepted definition.² Component 1 was the presence of 'muscular or subconscious physiological function'. Component 2 was the presence of 'visual, auditory or tactile sensory feedback to the brain'. Twenty-four responses were coded as similar (37%), and 41 were coded as differing (63%) to the accepted definition of biofeedback therapy.

Seventy-one (93%) respondents provided information on equipment they use during biofeedback therapy sessions, with nine (14%) using no equipment at all. Of the 62 (86%) using equipment, 50 (70%) use visual sensory feedback through manometry or EMG of pelvic floor muscle contractions, 37 (52%) provide auditory feedback by verbally commenting on muscle function with the practitioner using a rectal balloon and 26 (37%) use other equipment (table 1). Digital biofeedback is an auditory feedback through manually feeling the muscle contractions of the pelvic floor and verbally commenting on them to the patient. This is frequently used by physiotherapists

Table 1 Equipment and methods used to deliver biofeedback

Method/equipment	Responses (N)	Per cent
Digital biofeedback (auditory)	10	34
Visual biofeedback devices (various)	7	24
Muscle stimulation devices	5	17
Mirrors	2	7
Transanal irrigation	2	7
Anal plugs	1	3
Diaries	1	3
Digital examination	1	3
Home educators	1	3
Percutaneous tibial nerve stimulation	1	3
Ultrasound	1	3
Vaginal examination	1	3
Vaginal weights	1	3

Table 2 Methods used during biofeedback therapy sessions

Methods	Number	Per cent
Lifestyle advice	64	98
Dietary advice	63	97
Exercises	63	97
Toileting position	63	97
Urge resistance	54	83
Brace pump technique	51	78
Balloon catheter	35	54
Medication advice	8	12
Transanal irrigation	4	6
Relaxation techniques	3	5
Muscle stimulation	3	5
Myomed/neurotrac/EMG	3	5
Neuromodulation (PTNS)	2	3
Abdominal exercises	1	2
Abdominal massage	1	2
Acupuncture	1	2
Anal plugs	1	2
Counselling	1	2
Diaphragmatic breathing patterns	1	2
Defecatory technique advice	1	2
Muscle stimulation	1	2
Myofascial release techniques	1	2
Pelvic floor exercises	1	2
Posture advice	1	2

EMG, electromyography; PTNS, percutaneous tibial nerve stimulation.

and respondents have placed this in the other equipment free text to highlight its use.

Methods employed (65 respondents, 86%) during therapy sessions were varied and are summarised in [table 2](#). We specifically questioned the types of muscle exercises used by practitioners and received 62 responses (82%) with a large variation in use ([table 3](#)).

We asked respondents to indicate whether or not they had any formal or informal training, and the

response rates were 87% and 84%, respectively. Forty-three (65%) described formal assessed training courses (see online supplementary table S5) and 61 (95%) described informal training. We asked respondents to describe the delivery of informal training (see online supplementary table S6). Informal training was delivered predominantly by peers (59%) and mentors (46%) and in a minority by manufacturers of biofeedback equipment (5%) or by unspecified courses (3%) or shadowing outside of the Trust (3%). To investigate the validity and reliability of training courses in general, respondents were then directly asked whether they were self-taught, and if so, how they went about this. Sixty-one participants responded (80%), with 32 (52%) stating they were self-taught, and 29 (48%) indicating they were not self-taught. Thirty free text responses described how self-taught respondents felt they had achieved their training (see online supplementary table S7). This was primarily by reading journal articles (63%), training with and visiting to observe peers (47%), reading books (33%), attending conferences (17%), attending study days (17%), experience of practising biofeedback (10%), multidisciplinary team meetings (MDTs) (10%), manufacturer's instructions (7%), online (7%), lectures (3%), interactive forum of the Chartered Society of Physiotherapy (iCSP) threads (3%), Trust training (3%) and practising alone (3%). Two respondents completed the question and admitted to no formal or informal training, did not consider themselves to be self-taught and then discontinued the survey.

Questions on formal or informal supervision gained 61 responses (80%), with 22 (36%) being formally supervised and 39 (64%) informally supervised. Respondents described the form that their supervision takes in a free text box (see online supplementary table S8). Formal supervision (n=21) was undertaken by senior clinical colleagues (38%), peers of a similar grade (38%), non-clinical managers (10%) or others (15%). Informal supervision (n=37) was by senior clinical colleagues (30%), peers of a similar grade (41%), through specialist meetings (27%) or none (3%). Fifty-eight (76%) completed a question on regularity of supervision as: regular 24 (41%), irregular 19 (33%) or none 15 (26%).

Sixty-one (80%) respondents answered a question on whether outcomes were audited in the biofeedback clinic, with 41 (67%) auditing and 20 (33%) not.

A VAS was used to estimate the practitioners' perception of efficacy of biofeedback for CIC in their clinic, 54 responses (71%) were received from 23 nurses, 19 physiotherapists, 7 physiologists and 5 others. [Figure 1](#) highlights the perception of efficacy using the VAS percentages in the whole and sub-groups, and [figure 2](#) is the distribution curve of the range of VAS responses, which does not follow a normal distribution.

Table 3 Exercises used during biofeedback therapy

Common exercises	Number	Per cent
Brace pump	50	81
Lift	42	68
Urge resistance	46	74
Pelvic floor exercises	50	81
Anal sphincter exercises	60	97
Other exercises	13	21
Relaxation	4	6
Abdominal	3	5
Breathing	1	2
Core strength	1	2
Global training	1	2
Hypopressive	1	2
Pilates	1	2
Piriformis	1	2

Figure 1 Perceived efficacy of biofeedback for chronic idiopathic constipation reported on the Visual Analogue Scale (VAS) (%) according to the practitioners' healthcare profession. Twenty-three nurses, 19 physiotherapists, 7 physiologists and 5 others. 'Others' included alternative therapists who undertake biofeedback therapy. There were no significant differences in VAS % response between nurses and physiotherapists. The sample of physiologists and others is too small to statistically analyse.

There were no statistically significant differences between the perceptions of efficacy of nurses or physiotherapists. The VAS data were further analysed by splitting respondents according to their geographical distribution as follows: Northern, defined as Trust/hospital postcode in North of Birmingham, and Southern, defined as Trust/hospital postcode in or South of Birmingham. The Northern group consisted of $n=20$ with a mean of 46% (SD 23%), and the Southern group consisted of $n=26$ with a mean of 70% (SD 13%). They appear to be significantly different on analysis with a Student's t test of variance of means ($p<0.001$) (figure 3, see online supplementary table S9).

Figure 2 The distribution curve of practitioners' perceptions of biofeedback efficacy for chronic idiopathic constipation. The Visual Analogue Scale % responses were counted in 10% intervals. The curve does not follow a normal distribution and has a negative skew.

Figure 3 Practitioners' perception of biofeedback efficacy for chronic idiopathic constipation varies from North to South in the UK. The Visual Analogue Scale % responses were grouped according to geographical location. The Northern group consisted of $n=20$ with a mean of 46% (SD 23%), and the Southern group consisted of $n=26$ with a mean of 70% (SD 13%) ($p<0.001$).

All respondents were offered the opportunity to provide further comments in a free text box at the end of the survey. Thirty-one (41%) respondents provided further information, and the narratives were analysed by coding individual lines using a thematic analysis in an attempt to identify recurring issues, perceptions and ideas of the practitioners on biofeedback therapy, which could be explored further. Multiple themes emerged and these contained positive and negative perceptions of the therapy and how it is delivered to patients. The holistic nature of biofeedback therapy was commonly mentioned with numerous practitioners stating that it can only be effectively delivered as a combined therapy tailored to the individual patients' needs; part of a 'package of care'. Several commented that their clinic name had even changed to reflect 'the holistic and concomitant therapies delivered' during treatment sessions. The multiple techniques that can be employed to perform biofeedback were frequently mentioned and that practitioners' believe in general that biofeedback is effective in managing bowel dysfunction. Service restrictions either through 'long waiting times', 'limited equipment' or personnel were common, and several commented that they 'would use other techniques if the equipment was available.' Physiotherapists commonly indicated their perception of providing superior biofeedback therapy than nurse specialists, as they feel 'more competently trained to assess and treat muscular dysfunction.'

DISCUSSION

Efficacy of biofeedback therapy for CIC and dyssynergic defecation remains unproven,¹¹ which seems

to conflict with the opinion of most practitioners surveyed in the UK and the academic literature that is regularly cited within the UK.^{3–7} Only 37% of practitioners in this service evaluation adequately described biofeedback according to an accepted definition. Overall, there is marked variability in practitioners' perceptions of efficacy for CIC. There is a suggestion that practitioners in the South believe the therapy to be more effective than their Northern counterparts, and the explanation for this is unclear.

Visual and auditory biofeedbacks are reported as the most commonly used methods of therapy administration. A significant proportion of practitioners have reported variable methods from using mirrors to performing transanal irrigation and percutaneous tibial nerve stimulation during biofeedback clinics. The use of concomitant therapies obviously clouds practitioners' observations as to what therapy is actually helping the patient, and variability in therapy methods may significantly affect the success of the treatment. The majority of respondents thus appear to be practising bowel retraining clinics with a variety of concomitant therapies, of which biofeedback is one component, and more than a quarter of practitioners are not performing instrumented biofeedback. Consensus is therefore required on how biofeedback should be delivered in the NHS and on what (if any) other concomitant therapies are acceptable during biofeedback treatment. An expert UK panel may consider international guidance recently published on biofeedback for anorectal disorders.¹²

A significant proportion of practitioners have reported that their training and supervision are inadequate. A significant proportion (52%) felt they were self-taught. There are currently no mandatory courses required to practise biofeedback therapy in the UK, and the authors propose that a consensus should be formed on minimum standards of training, registration and revalidation of all practitioners.

The data in this service evaluation imply that presently biofeedback therapy is delivered variably across the NHS and that outcomes may also vary considerably. Practitioners' perceptions of therapy efficacy for CIC vary across the country and may be due to variation in methods or concomitant therapy use in bowel retraining clinics. Practitioners' understanding of the concept of the therapy on the whole is poor, and the majority feel they are poorly trained, supported and supervised to deliver the therapy. The qualitative data demonstrate strong themes of an effective holistic therapy that is unfortunately affected by a lack of equipment, time and practitioners in most Trusts. Physiotherapists feel they deliver more effective treatment than other practitioners due to their knowledge and training in manipulating muscle

function. These issues should be explored further in any attempt to standardise the therapy training and practice.

Biofeedback therapy will continue to be used in the NHS for the foreseeable future and therefore this therapy requires national guidelines to help practitioners administer it consistently and effectively. Development of training and supervision standards is a priority as well as a consensus to standardise therapy. There should also be agreement on consistent outcome measures to assess the efficacy and safety of this treatment.

Key messages

- ▶ Biofeedback therapy is delivered using widely variable methods in the UK.
- ▶ UK practitioners report widely variable success in treating chronic idiopathic constipation.
- ▶ A majority of UK practitioners feel poorly trained, supported and supervised.

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