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A systematic review outlining the impact of education on patients and physicians in gastroenterology

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ABSTRACT

Functional gastrointestinal symptoms (FGIDs) refer to a noticeable change in the body that is reported by the patient as being different from normal. FGIDs can have a significant impact on the patient's quality of life by interfering with daily functioning. The primary objective of the current paper was to identify short-term educational interventions for patients diagnosed with FGIDs and medically unexplained symptoms. This is with the aim of assessing its effectiveness on patient's quality of life and symptom severity. The second objective was to establish the current educational programmes and training opportunities available for physicians working with this subgroup of patients. This is in order to ascertain if these could change negative physician beliefs and attitudes. Databases such as PubMed and Google Scholar were searched from November to February 2018. A total of eight interventions were found which were evaluated using the Behavioural Change Techniques Taxonomy. Short-term educational programmes combining the use of lectures and practical sessions were found to be the most effective in improving patient quality of life and symptom severity. Managing patient exposure through the use of problem-based learning was considered the most effective teaching method for trainee physicians and could help to prevent the internalisation of negative attitudes. Definite conclusions about the effectiveness of patient and physician interventions are difficult to ascertain due to the small number of studies found and the high risk of bias. Future research should focus on providing a more unified approach to the management of this subgroup of patients.

KEYWORDS

Functional gastrointestinal disorders; medically unexplained symptoms; quality of life; physician attitudes; early education

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Introduction

Functional Gastrointestinal Disorders (FGIDs) recognized by morphologic and physiological abnormalities often include a combination of motility disturbance, visceral hypersensitivity, and altered mucosal immune function, gut microbiota, and central nervous system processing (Drossman, 2016; Jones et al., 2007). The Rome IV criteria classify FGIDs as disorders based primarily on symptoms rather than physiological criteria. Functional gastrointestinal symptoms refer to a noticeable change in the body that is reported by the patient as being different from normal, which may include nausea, pain and vomiting (Drossman, 2016). FGIDs can have a significant impact on the patient’s quality of life by interfering with daily functioning, leading to work absenteeism and a decreased involvement in social and leisure activities (Riehl et al., 2015).

In an integrative attempt, the biopsychosocial model (Engel, 1977) outlined the influence that early life, psychological stress, and other psychosocial factors can have on the development of the illness. For instance, a person’s genetic composition may lead to a greater susceptibility of developing the illness which may be exacerbated depending on the individual’s response to stress and exposure to psychosocial factors. As with any chronic illness, this may have psychosocial consequences which perpetuate and amplify the symptoms by affecting one’s general wellbeing, daily functioning, and sense of control (Drossman, 2016). Since the biopsychosocial model, several models have been proposed to help patients and physicians understand more clearly the way in which the body and illness function as a whole.

Patient education

The Clinical Care model is an educational framework which is based on the premise that providing patients with the opportunity to share illness experiences with others, combined with professional scientific knowledge, can facilitate learning experiences and enable individuals to find useful strategies for managing their everyday illness symptoms (Håkanson et al., 2012).

Research has outlined several benefits from patient education programmes, such as an improvement in symptoms and better quality of life. Findings from one patient's educational programme indicated that patients were more self-secure, were better prepared to manage their symptoms and maintain their well-being after taking part. This was in part due to the better understanding they had regarding their illness, as well as the opportunity to listen to the illness stories of others (Håkanson et al., 2012).

A study using the concepts proposed by the self-efficacy theory and the biopsychosocial model found that patients made positive improvements after participating in an 'Irritable Bowel Syndrome' (IBS) school. These patients learnt about mechanisms related to enhancing skills mastery, reinterpretation of physiological symptoms, and modelling (Bandura, 1977; Lorig, 1996). Patients were also provided with the opportunity to share their own experiences with other patients regarding methods and strategies that they had found to be useful when managing their symptoms. The education group displayed greater reductions in IBS symptom severity and gastrointestinal specific anxiety, as well as greater improvements in the perceived knowledge of IBS. Additionally, several aspects of health-related quality of life (QOL) were significantly improved after the group education (Ringström et al., 2010).

Physician education and training opportunities

Much of the research has outlined that the management of patients with medically unexplained symptoms can be challenging and for some trainee physicians can act as a significant source of anxiety, particularly around missing serious pathology (Warner et al., 2017). Whilst doctors have adopted a variety of approaches to manage these patients, for instance by exploring psychological, social and physical factors (Warner et al., 2017) clinician attitudes towards patients still vary considerably. This is because some physicians find managing these patients as a positive challenge while others find the process to be exhausting and time-consuming (Warner et al., 2017). Inconsistencies between different clinicians risks portraying contradictory messages to the patient and this can lead to a loss of the patient's confidence and trust.

The literature on how medical students are trained to manage patients with medically unexplained symptoms is very limited (Joyce et al., 2017). One survey given to different UK medical schools found that functional syndromes were entirely absent in some medical curricula, and if they were present, this typically accounted for less than a day of teaching (Howman et al., 2012). One study outlined that brief training given to medical undergraduates in irritable bowel and chronic fatigue syndromes led to improvements in student knowledge and attitudes towards these patients (Friedberg et al., 2008).

The aim of this paper is to systematically review the state of the scientific literature regarding the current educational interventions available for this subgroup of patients. Additionally, it aims to identify if educational interventions could affect symptom severity and quality of life. The review also aims to assess current interventions and training opportunities for physicians working with this subgroup of patients. This was in order to establish if this could lead to more positive beliefs and attitudes.

Materials and methods

PROSPERO approved our protocol before data analysis (Eiroa-Orosa & Georghiades, 2019)
We conducted this systematic review adhering to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA; Moher et al., 2009) guidelines (see supplemental document one).

Participants

Inclusion and exclusion criteria for the studies were developed and agreed upon by both authors before the review process. Patient intervention studies had to meet the following criteria: (a) Patients were aged ≥18 years at baseline (b) gastrointestinal diagnosis and (c) refer to a short-term health educational or psychoeducational intervention. Physician studies were included based on the following: (a) The physician/gastroenterologist treated patients with FGIDs or medically unexplained symptoms and (b) the study referred to educational or training opportunities. All the studies had to be published in English.

Search strategy for identifying potential studies

We searched PubMed and Google Scholar from November to February 2018 (see supplemental document two). The search strategies included the following keywords; gastroenterology, health education, psychoeducation, psychosocial interventions, rumination syndrome, irritable bowel syndrome, functional dyspepsia, patients with somatisation, secondary care, and physicians. We excluded animal studies, meta-analyses, systematic reviews, book chapters, symposiums, specialised psychological interventions, and interventions involving paediatric patients. We believe that the characteristics and contexts of interventions for paediatric patients are distinct enough to warrant a different review.

Data collection and analysis

Selection of studies

Initially, studies from PubMed were identified using an online screening database called Rayyan, which allowed for the screening of titles and abstracts. The whole selection process was recorded in a separate excel database accessible to both authors. One author (AG) independently screened and recorded the titles and abstracts for selection. Both authors AG and FJEO) independently assessed the articles that should be selected for the review.

Data extraction

In this review, we conducted a narrative synthesis for each study. The initial step involved conducting a preliminary synthesis which was implemented by one author (AG). The preliminary synthesis involved grouping the studies and producing a tabulation of the results which involved the obtainment of the following characteristics of each study: participant demographics, intervention length, content and groups, outcome and conclusions. The second author (FJEO) reviewed the content of the table and critically assessed each study to ensure it met the inclusion criteria.

Behavioural change techniques taxonomy coding

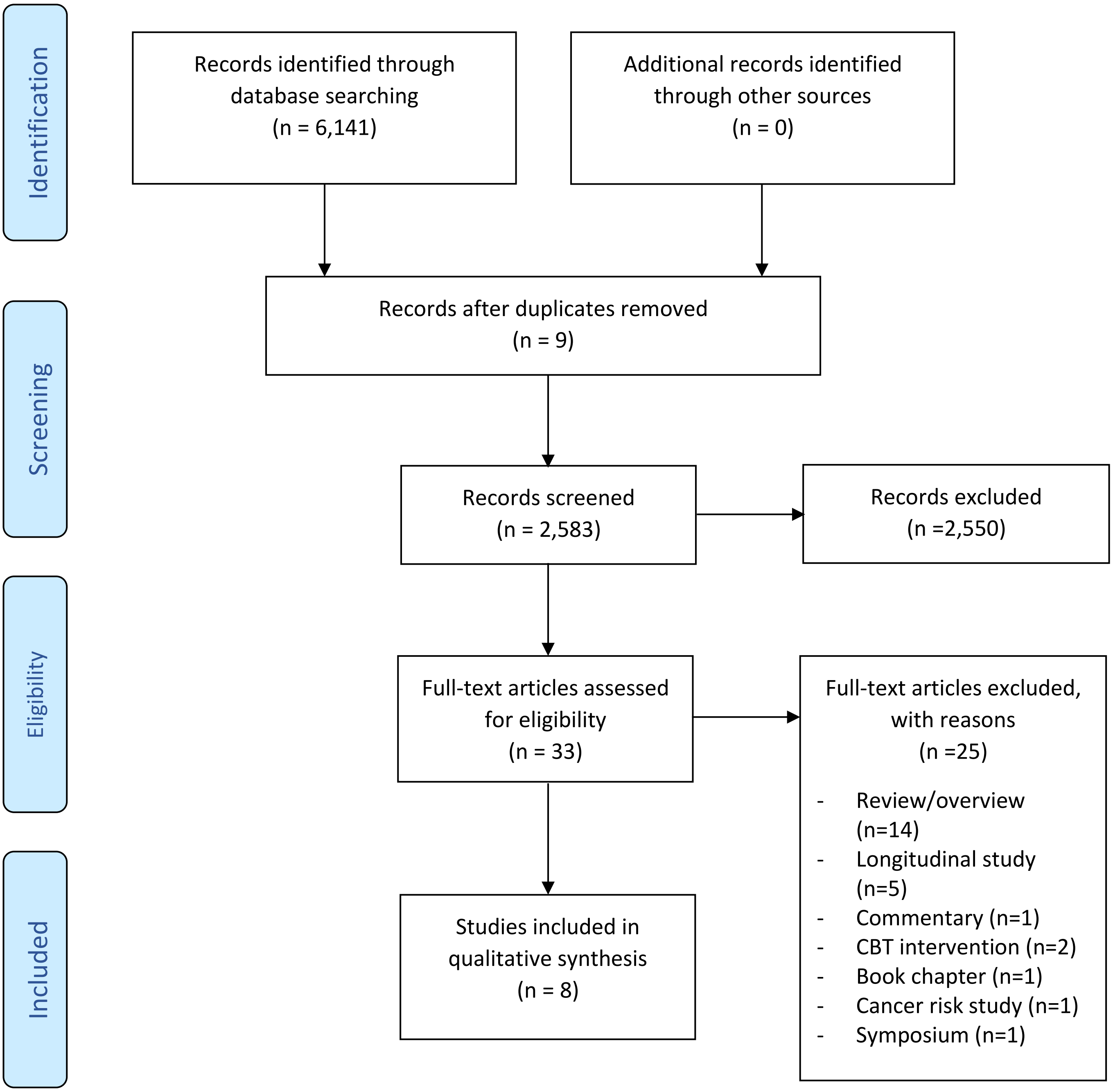
Each of the studies was coded using the Behavioural Change Technique Taxonomy (BCT ; Michie et al., 2013). Using a similar technique that has previously been conducted, behavioural interventions were coded if they targeted patient's behaviour or healthcare provider's behaviour (Presseau et al., 2015).

One of the authors (AG) individually assessed each intervention using the guidelines and examples adopted in previous studies (Kebede et al., 2017; Michie et al., 2015; Presseau et al., 2015). In the case that interventions were described as involving the provision of 'education' without any additional information, the BCT was coded as *information about health consequences* and *instruction on how to perform the behaviour*. Additionally, when interventions were described as providing 'training' without further detail, the training intervention was coded as *instruction on how to perform the behaviour.* The interventions were then further assessed by the second author (FJEO). Any discrepancies were resolved through discussion.

Assessment of the quality of the methodology

The Quality Assessment Tool for Quantitative Studies was used to assess the quality of the methodology of each study included (Practice, 1998). This tool was used as it examines the characteristics of both randomized and nonrandomized designs. Both of the researchers involved in the study evaluated each study for potential bias. Any discrepancies were discussed until a consensus was reached. Raters evaluated the articles on the following characteristics (a) selection bias (b) study design (c) confounders (d) blinding (e) data collection methods and (f) withdrawals and dropouts. Each study received a global rating of either 'Weak', 'Moderate' or 'Strong'.

Figure 1. Flow diagram of the study selection process



Results

Study selection

The database search provided 6,141 related studies, of which 33 articles were potentially relevant. After screening the full text, a total of 25 were excluded due to not meeting the inclusion criteria (see Figure 1 for full details). A total of eight articles were considered to be suitable for this review (Bengtsson et al., 2006; Berens et al., 2018; Håkanson et al., 2012; Joyce et al., 2017; Labus et al., 2013; Ringström et al., 2009; Schaefert et al., 2013; Warner et al., 2017).

Patient intervention findings

Few effective short-term educational programmes were found for patients with functional gastrointestinal disorders and medically unexplained symptoms (see table 1). From the studies identified, it was found that the most effective method for improving quality of life and symptom severity was group-based educational programmes combining lectures and practical sessions.

Short-term educational programmes

The first study used a course of instruction which involved an educational programme consisting of four sessions. The findings showed that when providing information to women with IBS on topics such as medical care and stress management, they perceived less pain, achieved more vitality, and experienced a higher quality of life (Bengtsson et al., 2006). Improvements were also found from baseline to 12-month follow-up in abdominal pain and vitality.

The second study showed that after a five-day patient educational programme that overall symptom severity of patients with IBS was reduced (Håkanson et al., 2012). The participants scored their symptoms and the overall influence of IBS on everyday life as being significantly lower after the education programme. Additionally, improvement in symptom severity also led to better coping strategies (Håkanson et al., 2012).

In a similar study conducted by Ringström and colleagues (2009) a six-week IBS school was implemented based on the self-efficacy theory. There was a statistically significant reduction in gastrointestinal symptom severity, which was indicated with lower scores on the IBS severity scoring system after 3 and 6 months (Ringström et al., 2009). Additionally, statistically significant improvements were found in health related QOL which were found on several domains of the SF-36, as well as on both the physical and mental summary scores after an educational intervention (Ringström et al., 2009).

Furthermore, one study used a collaborative group intervention for patients with medically unexplained symptoms. There were between-group effects for improvement in symptom severity that lasted 12 months, but the effect lacked significance. Additionally, there were between-group effects for the mental domains of vitality and emotional role functioning and among the SF-36 physical domain of general health perceptions. Patients in the intervention group also reported significantly greater improvements in mental quality of life than the controls at 12 months (Schaefert et al., 2013).

Psychoeducational interventions

The study by Berens et al (2018) involved a multicomponent group therapy intervention. This involved integrating and combining evidence-based psychodynamic therapy with psychoeducation, gut-directed hypnotherapy, and treatment elements from cognitive behavioural therapy in a disorder orientated manner. The disorder orientation was provided by introducing the brain-gut axis as a bio-psycho-social explanatory model for FGIDs. The results from the 'Irritable Bowel Severity Scoring System' showed that IBS symptom severity improved within the intervention group (Berens et al., 2018).

The study by Labus et al (2013) aimed to evaluate the effectiveness of a psychoeducational intervention on IBS symptoms. Sixty-nine IBS patients were randomised to an intervention or wait-list control group. Patients who took part in the intervention showed statistically significant higher improvements in gastrointestinal symptom severity, visceral sensitivity, depression and quality of life post intervention. Additionally, patients who received the intervention demonstrated higher QOL scores than controls at the end of the study, which was also the case during the 3-month follow-up. Interestingly, the intervention did not lead to higher levels of QOL for those patients with high baseline levels of IBS-QOL. Whereas for patients who were classified as having an 'average' level of QOL, a lower score for severity in symptoms was found in the intervention group than in the control group (Labus et al., 2013).

Physician intervention findings

Few studies have outlined training opportunities and educational interventions for physicians working with this subgroup of patients (see table 1). A patient-centred approach and managed patient exposure were found to be the most effective methods of changing beliefs and attitudes.

Qualitative interviews with physicians

During the interviews conducted with physicians and gastroenterologists, common attitudes were found regarding the management of patients. For example, some of the key findings were that most patients with IBS should and can be managed by primary care physicians and that IBS patients require a patient-centred approach.

Whilst variations were found in the approach used during consultation, both primary and secondary-level care clinicians emphasised the importance of good communication between clinicians and patients, as well as the importance of providing the patient with a clear explanation of their IBS symptoms. Regarding the development of their personal approach towards managing these patients, many physicians spoke of learning by example from different colleagues, whilst others spoke of learning from their own mistakes. A reoccurring theme from nearly all the physicians interviewed was that they had received little or no teaching during their training and many relied on informal ‘on the job’ experience (Warner et al., 2017).

In a study conducted with medical educators, some solutions and recommendations were outlined that could address training limitations. The first recommendation was to address negative attitudes and behaviour by focusing on the tutors’ understanding regarding patients with medically unexplained symptoms, as well as sharing good practice and supporting trainee physicians to think critically. By doing so, educators have the chance to help trainee physicians understand patient’s frustrations and are less likely to internalise the negative attitudes related to this subgroup of patients. The second recommendation outlined the importance of encouraging students to learn through ‘managed patient exposure’. This involves providing trainee physicians with an insight into the experiences of the patients and carers. This could convey to the trainee physician the impact that these disorders have on the patient, as well as the most appropriate method of working with these types of patients. For instance, one recommendation that was provided involved evidence-based guidelines (Joyce et al., 2017).

Content analysis of interventions using the behavioural change techniques taxonomy

As seen in Table 2, each of the interventions had addressed at least one of the BCT categories. Of the eight studies included in the current systematic review, six had implemented clear BCTS. The two physician studies had addressed the need for training opportunities; however, they did not provide details outlining the intervention. As a result, both were coded as ‘instruction on how to perform the behaviour’.

Table 1. Overview of the studies included in the systematic review.

Author	Participant demographics	Intervention length, content and groups	Outcome	Conclusions
1. Bengtsson et al. (2006).	Patients with irritable bowel syndrome (IBS)	• Twenty-nine women with IBS participated in a programme of instruction. The women also completed the Gastrointestinal Symptom Rating Scale and the Psychological General Well-being Index	Twenty-three of the women completed the questionnaires 12 months after the course. There were improvements in abdominal pain, vitality, as well as a reduction in the number of visits to physicians and dieticians.	Information related to the disease may help women with IBS to perceive less pain and more vitality and thereby experience a better quality of life.
2. Berens et al. (2018).	Patients with IBS	• Two hundred and ninty four patients (220 had IBS; 144 diagnosed with SAD). • Thirty patients consented to participate (group intervention n=16) and the wait-listed control condition (n=14).	The group intervention was not significantly superior to the wait-listed control condition. Effect size for between-groups at the end of the treatment (post) was moderate.	The integrative group intervention for IBS proved to be acceptable and feasible in an interdisciplinary tertiary care setting.
3. Håkanson et al. (2012).	Patients with IBS	• Thirty-one participants • Focus group interviews	Four patterns were found to be important. a) Being part of a safe community b) Learning about oneself through others c) Understanding and controlling the body and illness as a whole d) Being outside of the community	The combination of reciprocal sharing of experiences and the provision of professional scientific knowledge during the patient education programme together contributed to a readiness to improve well-being in everyday life.

Author	Participant demographics	Intervention length, content and groups	Outcome	Conclusions
4. Joyce et al. (2017).	Medical educators from different UK medical schools	• Twenty-eight medical educators from 13 different UK medical schools • Semi-structured interviews	• Barriers to implementing functional syndromes (FS) training are beliefs about the complexity of FS, tutors' negative attitudes towards FS, and FS being perceived as a low priority. • They recommended that students learn about FS through managed exposure but only if the tutors' negative attitudes and behaviours are also addressed.	• Negative attitudes towards FS by educators prevent designing and delivering effective education • There is a need to implement FS training, but recommendations are multifaceted. • There needs to be an increase in liaison between students, patients and educators in order to develop more informed and effective teaching methods for trainee physicians regarding FS
5. Labus et al. (2013).	Patients with IBS	• Sixty-nine patients were randomised to the intervention (n=34) or to the wait-list control group (n=35)	Patients in the intervention showed significant improvement on gastrointestinal symptom severity, visceral sensitivity, depression and QOL post-intervention and these were maintained at the 3-month follow-up.	A brief psycho-educational intervention is effective in changing cognitions and fears regarding the symptoms of IBS and these changes are linked to improvements in symptoms and quality of life.

Author	Participant demographics	Intervention length, content and groups	Outcome	Conclusions
6. Ringström et al. (2009).	Patients with IBS	• Twelve patients (5-7 in each group) • Five different health care professionals were involved in the education • Six weekly 2 h sessions	Patients were satisfied with the IBS school. The gastrointestinal symptoms, health related quality of life and knowledge about IBS improved significantly after the education.	This study indicated that an IBS school seems to be a useful method of meeting the needs of patients and providing them with information about IBS and could help to improve the patients' gastrointestinal symptoms, health related quality of life and knowledge about IBS.
7. Schaefert et al (2013).	Patients with medically unexplained symptoms	• Three hundred and four patients (170 intervention group; 134 in the control group). • Ten weekly group sessions and two booster meetings	There was a significant reduction in somatic symptom severity at 6 months, but which lacked significance at 12 months. Between-group effects indicated less health anxiety, less psychosocial distress, and fewer GP visits.	Collaborative group interventions led to meaningful improvements in mental but not physical quality of life. This has the potential to bridge the gap between general practice and mental health care.
8. Warner et al. (2017).	Physicians working with patients in secondary care	• Twenty consultants and training-grade physicians working in cardiology, gastroenterology, rheumatology and neurology • In-depth interviews with 20 physicians, 11 consultants, and 9 specialty trainees.	There was considerable variation in how the physicians approached patients who presented with medically unexplained symptoms. Physicians reported little or no formal training in how to manage these types of patients. Physicians described learning from their own experience and from senior role models.	There is a need for serious consideration as to how the management of patients with medically unexplained symptoms are included in medical training and in relation to the planning and delivery of services.

Table 2. Content analysis of the interventions using the BCT

BCT’s identified (n=8)	Bengtsson et al (2006)	Berens et al (2018)	Håkanson et al (2012)	Joyce et al (2017)	Labus et al (2013)	Ringström et al (2009)	Schaefert et al (2013)	Warner at al (2017)
Antecedents (12.6)	■		■		■	■	■	
Feedback and monitoring (2.3)							■	
Goals and planning (behavior) (1.1)							■	
Goals and planning (outcomes) (1.3)		■						
Natural consequences (5.3)			■					
Shaping knowledge (4.1)				■	■	■		■
Social support (3.3.)		■	■				■	

Table 3. A summary of the quality ratings of the included studies

Source	Global Rating	Selection Bias	Study Design	Confounders	Blinding	Data Collection Method	Withdrawals and Dropouts
Bengtsson et al, 2006	Weak	Moderate	Moderate	Weak	Weak	Strong	Strong
Berens et al, 2018	Moderate	Moderate	Strong	Strong	Weak	Moderate	Strong
Hakanson et al, 2012	Weak	Moderate	Weak	Weak	Weak	Weak	N/A
Joyce et al, 2017	Weak	Strong	Weak	Weak	Weak	Weak	N/A
Labus et al, 2013	Moderate	Moderate	Strong	Strong	Weak	Moderate	Moderate
Ringström et al, 2009	Weak	Moderate	Moderate	Weak	Weak	Strong	Strong
Schaefert et al, 2013	Strong	Moderate	Strong	Strong	Strong	Strong	Strong
Warner et al, 2017	Weak	Moderate	Weak	Weak	Weak	Weak	N/A

Quality ratings of the included studies

Table 3 demonstrates the methodological quality of the studies across a range of dimensions (Practice, 1998). Overall, one study received a strong global rating (Schaefert et al., 2013), two studies received a moderate global rating (Berens et al., 2018; Labus et al., 2013) and five studies received a weak global rating (Bengtsson et al., 2006; Håkanson et al., 2012; Joyce et al., 2017; Ringström et al., 2009; Warner et al., 2017).

Discussion

The present systematic review helped to identify short-term educational interventions for patients with gastrointestinal disorders and with medically unexplained symptoms. Short-term educational programmes have been used to increase knowledge, teach simple self-management strategies, and decrease symptom-related fears (Ringström et al., 2009, 2010).

However, a limited number of studies have implemented educational programmes focusing on reducing symptom severity and improving quality of life for this subgroup of patients (Bengtsson et al., 2006; Berens et al., 2018; Håkanson et al., 2012; Labus et al., 2013; Ringström et al., 2009; Schaefert et al., 2013). A total of six interventions were found, with the majority implementing group-based educational programmes carried out by a number of different healthcare professionals.

Additionally, only a small number of studies appear to have explored educational or training programmes for physicians working with this subgroup of patients. Based on the few studies that were identified, it appears that little or no formal training is provided to physicians and that recommended strategies to use with patients are inconsistent. One study outlined some possible barriers that could be preventing the implementation of training such as beliefs about the complexity of functional syndromes, tutor’s negative attitudes towards functional syndromes, and being perceived as a low priority for the curriculum (Joyce et al., 2017). One solution that has been proposed to overcome this barrier is to provide empowering explanations which have already been positively received by patients (Salmon, 2007).

Limitations

Our review is not without its limitations. Due to the small number of papers included, it may be difficult to draw conclusions regarding the most effective educational intervention for patients and physicians. Additionally, the lack of a control group in some of the studies (Bengtsson et al., 2006; Håkanson et al., 2012; Ringström et al., 2009) and the small numbers included in each condition may threaten the internal validity of these studies.

Conclusions

Patients with FGIDs and medically unexplained symptoms often find it difficult to manage their symptoms, which can have negative effects on their quality of life. Similarly, physicians may also find it a challenging experience with many lacking appropriate guidance and resources.

The use of patient educational programmes shows promising effects with 5 out of 6 studies reporting benefits to both quality of life and symptom severity. However, the effects of these interventions are moderated by weak or moderate quality ratings, thus making it difficult to draw definite conclusions.

Based on the findings, there appear to be variable approaches to managing patients with FGIDs and medically unexplained symptoms. Future research should focus on providing a more unified approach by focusing on symptom management rather than causes, and by sharing good practice techniques.

Data availability statement

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

Disclosure statement

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