

# Mind–body treatments for children with functional gastrointestinal disorders

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## SUMMARY

Paediatric functional gastrointestinal disorders (P-FGIDs) are common, affecting up to 25% of children worldwide. They are characterised by chronic abdominal pain and/or altered bowel habits without an underlying disease pathology. P-FGIDs are often associated with co-occurring anxiety and depression across all ages and treating P-FGIDs may provide an opportunity to develop a young person's wider emotion regulation capacities. Using a fictitious case vignette, we outline the range of psychosocial and biomedical treatments for the disorder and the need for an integrated and holistic approach. We propose that by intervening early and enabling children to be curious about, rather than fearful of, their bodily sensations, clinicians may be able to alter harmful illness trajectories in both pain and psychiatric domains.

## LEARNING OBJECTIVES

After reading this article, you will be able to:

- give examples of the heterogeneous presentations of childhood FGIDs and associated comorbidities
- formulate a clinical response to a child with FGIDs who complains of 'tummy pain' that has led to food restriction and school refusal
- understand the range of psychosocial and biomedical treatments for P-FGIDs and the need for an integrated and holistic approach.

## KEYWORDS

Psychosocial interventions; child and adolescent psychiatry; childhood experience; trauma and stressor-related disorders; education and training.

Abdominal pain often develops from completely normal bodily functions whose job is to signal a variety of sensations. These include hunger, overeating, indigestion, gaseous distension of the gut and the need to open bowels or urinate. When females enter adolescence, abdominal pain may relate to complex hormonal processes affecting their monthly menstrual cycle. Alongside these well-known physiological causes of discomfort, a range

of functional disturbance definitions have also been developed.

Throughout history, understanding the interplay of mind and body has been considered central to health. Asclepius, the Greek god of medicine, advised patients who attended his temple of healing in Epidaurus about lifestyle changes to improve the state of both mind and body. Moreover, many of the great early physicians grappled with the identification of treatable pathology from functional causes of pain. In more recent history, international efforts to inform the management of irritable bowel syndrome (IBS) led to the 'Rome criteria', descriptive criteria derived to prompt treating doctors to identify patterns in symptomatology and provide a useful framework to support the limited evidence-based treatments available for a wide range of functional gastrointestinal disorders.

Paediatric functional gastrointestinal disorders (P-FGIDs) are common, affecting up to a quarter of all children and infants worldwide (Chitkara 2005; Robin 2018). The Rome criteria classify P-FGIDs into three main groups: (a) functional nausea and vomiting disorders, (b) functional abdominal pain disorders (Hyams 1996) and (c) functional defecation disorders (Hyams 2016).

P-FGIDs are often associated with concurrent anxiety and depression in children of all ages (Campo 2012). They are conceptualised as disorders arising from dysregulation of the microbiota–gut–brain axis (Thapar 2020). The gut microbiome is the community of microorganisms that live in the gut and work together to break down food, while also protecting the integrity of the intestinal wall. Activation of stress systems dysregulates this highly complex and interconnected system and the gut plays an important role in immune system health (Thapar 2020).

P-FGIDs are associated with reduced quality of life, prolonged school absence and social withdrawal, all of which can have a profound impact on a child's social development and educational attainment (Varni 2015). For many children with FGIDs, symptoms persist into adulthood – one

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study reported 41% with continuing problems (Hoekman 2015). These disorders tend to be over-investigated and children with functional abdominal pain frequently present in emergency departments (Pant 2017). The healthcare costs of these conditions are substantial yet produce minimal yields (Dhroove 2010) and they impose a large emotional and economic burden on families (Hoekman 2015).

### Goals of assessment and treatment

This article reflects our experiences as a child and adolescent psychiatrist and a paediatric gastroenterologist working in the UK and an academic psychologist specialising in functional abdominal pain disorders in children, working in the USA. We strongly believe that working together in an integrated model is best practice for P-FGIDs, which are biopsychosocial conditions and multifactorial in their pathophysiology.

### Distinguishing between P-FGID types

Children with P-FGIDs are a heterogeneous group. For some, their gut problems are bothersome but cause only minor disruption to their lives. Many children do not need medical guidance, or if they do, a single visit to the doctor for reassurance is enough. For others, the experience of FGIDs leads to significant functional impairment (van Tilburg 2018). There is strong evidence to suggest that P-FGIDs (age 3–9 years) predict emotional disorders in adulthood (Hotopf 1998; Stein 2017) and there is growing interest in whether there is a link with disordered eating in adolescence (Stein 2021).

The Rome criteria are helpful in distinguishing between different types of P-FGID because they have overlapping symptoms. For example, both functional constipation and IBS are characterised by pain and irregular bowel movements, but the underlying pathophysiology is different. In functional constipation, sufferers may hold on to their stool out of fear of painful bowel movements and so they can often be helped by laxatives to soften the stool. With IBS, the pathology is more complicated and laxatives tend not to reduce the associated pain (van Tilburg 2018).

### Treatment: overview

For many children with P-FGIDs, effective treatment requires a combination of approaches, including psychological interventions (cognitive-behavioural therapy and hypnotherapy), occasionally psychopharmacology (e.g. selective serotonin reuptake inhibitors, SSRIs) and dietary interventions (meal plans and probiotics) (van Tilburg 2018).

For young people with more severe co-occurring anxiety symptoms, clinicians would consider an

SSRI such as fluoxetine or sertraline. In adults with IBS, SSRIs are a first-line treatment and there is evidence that SSRIs are effective for anxiety/depression (strong-quality data) and pain (moderate-quality data). As 5-HT receptor-mediated signalling plays important roles in both the brain and the gut, there is a strong rationale for IBS treatments to target these receptors (Thapar 2020).

Treatment goals should focus on reducing symptoms and functional disability. Establishing trust and introducing the concept of FGID early is crucial. Doctors should aim to frame it as a positive diagnosis rather than one of exclusion, after everything else has been ruled out. Helping children and parents to understand that their symptoms may be influenced by hypersensitivity and hypervigilance, which can be modified, and are not manifestations of any disease, is the cornerstone of treatment (Brown 2016).

Parents of children with FGIDs may be anxious that doctors are missing dangerous pathology. This is understandable because it is especially challenging to make parenting decisions when a child is in pain. We want to maximise the competence of both parents and children to participate in activities and minimise their fears of harm. Parents must be listened to and reassured that appropriate tests have been completed to rule out organic disease. If ‘red flag’ symptoms develop (Box 1), these need to be identified and managed properly.

A child presenting with abdominal pain and red flag symptoms should be referred to a paediatrician with expertise to exclude treatable physical pathology prior to offering reassurance and referral for psychological assessment. Persistent abdominal pain is common and it is often the case that the children have been fully investigated, with normal blood

#### BOX 1 Red flag symptoms (rare but concerning features) in childhood abdominal pain which require a full investigative workup

- Focal right-sided pain
- Swallowing difficulties
- Significant faltering growth
- Gastrointestinal bleeding
- Joint pain
- Vomiting
- Nocturnal diarrhoea
- Perianal disease
- Family history of coeliac disease or inflammatory bowel disease

tests, normal faecal calprotectin and normal ultrasound scan, before referral to a paediatric gastroenterologist (Andrews 2020).

Once the child is referred to secondary care, having a range of professionals involved (a medic, psychologist, dietician) can help reassure the family and minimise unnecessary tests. It is also the case that children diagnosed with disorders such as coeliac disease or inflammatory bowel disease may have additional functional pain and benefit greatly from psychological strategies to manage these symptoms.

Clearly communicated psychoeducation is fundamental to this work. Families are reassured when they understand that it is possible to experience real pain without there being harm to the body. Fig. 1 illustrates the range of factors at play and families need to be introduced to the biopsychosocial model of pain.

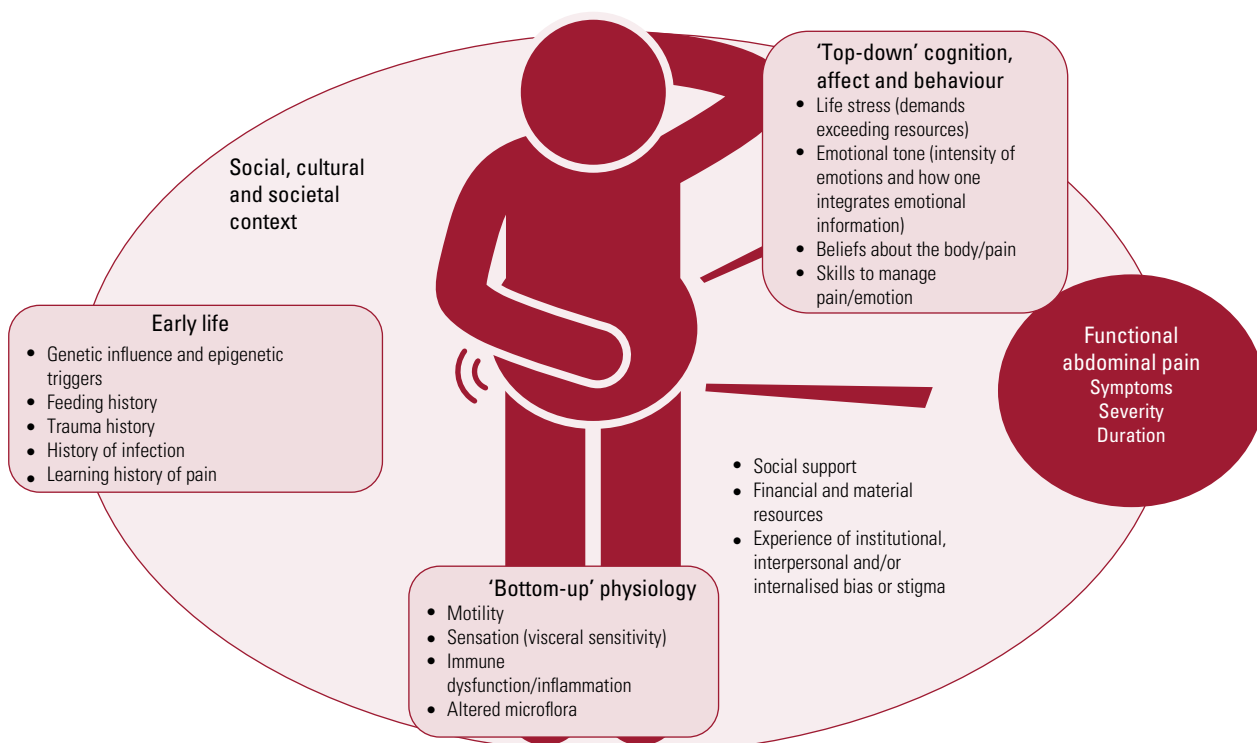
The strongest evidence for effective therapy comes from psychological treatments that aim to reduce psychological stressors driving dysregulation of the brain–gut axis, but there is also some evidence for biomedical approaches. The optimal approach is one that considers the interplay of external stressors, supports and behaviours, combined with the individual's physiology and emotional and cognitive capacities and responses (van Tilburg 2018). In other words, an integrated treatment model is the best approach.

Using metaphors to explain the pain can help, such as ‘chronic pain is like a fire alarm that keeps ringing although there is no fire’ or ‘the hardware of the body (bone, muscles, joints) is healthy, but the software has a glitch and needs a re-boot’ (Do 2019). Other tips for effective doctor–patient communication include (Schechter 2021):

- identifying the parents' and child's expectations at the outset
- validating the child's symptoms
- offering a positive diagnosis
- providing education
- emphasising a multidisciplinary approach to treatment
- staying connected by arranging regular follow-up
- offering an optimistic appraisal.

Importantly there is now increasing evidence that P-FGIDs often predict later psychiatric difficulties (Stein 2017, 2021).

Using a fictitious case vignette (an amalgamation of various presentations to our clinics), we will now show why an integrated approach to P-FGIDs can improve the management of real children by considering the longer-term development of emotional awareness and responsiveness (also known as ‘self-parenting’).



**FIG 1** The biopsychosocial model of pain. Diagram courtesy of Professor Nancy L. Zucker, Duke University, USA.

### Case vignette: Robyn

Robyn is an 8-year-old female with a 3-year history of recurrent abdominal pain. Robyn first developed pain after a bout of gastroenteritis which was treated with a range of antibiotics.

She is sensitive to food textures and frequently reports food regurgitation, describing it as ‘bubbling’ in her mouth. Her favourite foods are noodles and chicken burgers, and dislikes include fish, bacon and bananas.

Robyn lives with her parents. During the family assessment, she reports that her parents are often fighting and that she has experienced bullying at school. She struggles to fall asleep at night and frequently reports pain (in her ‘tummy’ and her ‘head’) before bed.

Robyn becomes increasingly sensitive to a variety of bodily sensations, including chewing, swallowing and gut distension. Her parents notice that chewing and swallowing lumps of food are normal when Robyn is distracted or otherwise engaged in an amusing activity while eating. She develops an intense fear of choking and starts to restrict her food intake. She becomes increasingly avoidant of activities and stops attending school and seeing friends.

(Note: children who have dysphagia or swallowing difficulties/trouble with lumps or food bolus obstruction may benefit from referral to paediatric gastroenterology to exclude eosinophilic oesophagitis.)

### Treating Robyn with an integrated approach

The vignette highlights the need to address biopsychosocial issues in the child’s FGID. It shows how both physical and psychological stress can trigger imbalance in the microbiota–gut–brain axis, and this may be expressed in functional gut symptoms.

A combination of psychosocial and biomedical strategies is required to stabilise Robyn’s microbiota–gut–brain axis. Psychological intervention is needed to target the food avoidance and anxiety, and dietary support is required for structured guidance on the reintroduction of previously avoided foods.

### Developing an FBI agent!

Robyn is introduced to an intervention that attempts to alter a young person’s experience of their body. She is trained to become a ‘feeling and body investigator’ (FBI) in a treatment that adapts for younger children many of the principles of cognitive–behavioural therapy for adolescents (Zucker 2017, 2019). Robyn’s bodily sensations are characterised by playful cartoon figures (e.g. Henry Heartbeat, Betty Butterfly; Fig. 2) to alter her initial fearful ‘knee-jerk’ reaction to bodily sensations. In the sessions, she is encouraged to playfully ‘investigate’ her body’s response to various experiments which are designed to demonstrate the wisdom, strength and resilience of the body (e.g. she notes ‘My heart is wicked smart. It knows how to adjust, how much to beat’; Fig. 2). Investigations also demonstrate the wisdom of her body in helping her to face fears. In the anxiety treatment literature these

‘investigations’ are formally referred to as interoceptive exposure activities and they are employed in disorders in which a fear of the body is a central feature. Sensory cartoon characters related to the taste, appearance, smell and texture of various foods also aim to alter knee-jerk reactions to food characteristics, and investigations aim to give children more agency in terms of both eating skills (e.g. swallowing) and taking more pleasure in food (e.g. ‘I can swallow a food after far fewer bites than I guessed’ and ‘I can alter the taste of a food to make it more to my taste’).

Robyn’s bodily sensations are intentionally provoked in session and treated as clues to a mystery. Using mindfulness skills, she is trained to cope with in-session symptom-like provocations (e.g. eating feared foods, wearing tight clothes).

Robyn learns about what her body is capable of (e.g. she can run faster than she predicted and she can eat a feared food even when she feels uncomfortable). These ‘experiments’ empower her to expand her dietary repertoire, return to school and carry on doing the things she enjoys. Thus, by teaching Robyn to be curious about her bodily sensations, rather than fearful, the treatment improves her wider emotion regulation strategies. Such body-focused interventions are particularly helpful for younger patients like Robyn, who may be less attuned to their cognitive processes.

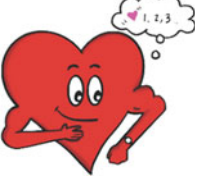








### Biomedical treatments

Targeted treatment depends on the likely diagnosis and is most helpful if symptoms sit on the IBS or abdominal migraine spectrum. Box 2 lists lifestyle modifications that have the best evidence in achieving optimal gut function.

Much has been written about treatment strategies for IBS, dyspepsia, abdominal migraine and food allergies. Despite weak evidence, some of these strategies, such as peppermint oil, avoiding foods that trigger symptoms, diets low in fermentable oligosaccharides, disaccharides, monosaccharides and polyols (FODMAP), migraine prophylaxis and anti-spasmodics, can all be helpful for some children and can be used alongside psychological treatments.

Chronic recurrent abdominal pain in children is commonly triggered by constipation, predominantly IBS. It seems wise, therefore, to trial a low-risk laxative such as macrogol to treat any possible constipation element of symptoms before reaching a final diagnosis of non-specific functional abdominal pain, i.e. pain that does not fit the criteria for other specific functional abdominal pain diagnosis (e.g. IBS, abdominal migraine, functional dyspepsia) or does not respond to targeted treatment.

The evidence base for medical/pharmacological treatment of non-specific functional abdominal

<p><b>The introduction</b></p>  <p><b>Henry heartbeat</b> Sensory sensitivities are actually 'sensory superpowers' children can harness to become stronger and wiser. Body investigations in every session demonstrate the body is wise and gettier wiser.</p> <p><i>'My heart is wicked smart. It knows how to adjust, how much to beat.'</i></p>	<p><b>The eats</b></p>  <p><b>Georgia the gut growler</b> Children learn to identify and respond to hunger and fullness cues. They start looking out for moments of deliciousness. They learn to eat until they are energize</p> <p><i>'My body can tell me that I need energy and when I'm fully energized.'</i></p>	<p><b>The explosions</b></p>  <p><b>Gaggy greg</b> Children learn many ways our body protects us such as gagging and vomiting. Children learn how to use humor to do hard (and sometimes disgusting) things.</p> <p><i>'I am tougher than I think. My body has some very noisy ways to protect me. Gagging is my mouth's way of showing surprise.'</i></p>
<p><b>The zoomies and shakies squad1</b></p>  <p><b>Betty the butterfly</b> Noticing and investigating activating emotions like anxiety, excitement, and anger is this session's focus.</p> <p><i>'My butterflies come to help me face my fears.'</i></p>	<p><b>The blahs</b></p>  <p><b>Blah Bertha</b> Children learn the function of low energy emotions like sadness, emptiness, and guilt. When foods are blah, doing fun investigations like rotating with Good Enough foods can add some excitement.</p> <p><i>'Blah Bertha helps me get the support I need.'</i></p>	<p><b>The soothies</b></p>  <p><b>Cheery Cathy</b> Finding ways to mindfully notice wonderful moments is this session's focus. Children continue to build, notice and appreciate positive memories with food.</p> <p><i>'Cheery Cathy reminds me to stop and feel this wonderful moment.'</i></p>
<p><b>The looksies</b></p>  <p><b>Fiona the flawed fry</b> Children learn to describe the appearance of food with playfulness.</p> <p><i>'can make food look beautiful.'</i> <i>'Exploring the looks of foods can help me expect the unexpected.'</i></p>	<p><b>The smellies</b></p>  <p><b>Bacon Benji</b> We can acclimate to smells over time and even identify foods just by their smell.</p> <p><i>'Smells give us information about food and I can adjust to most smells over time.'</i></p>	<p><b>The tasties</b></p>  <p><b>Salty sol</b> Children exploring different tastes of foods and how to manipulate food tastes to make them even better.</p> <p><i>'I can change the way food tastes to make it even more yummy.'</i></p>

**FIG 2** Example summaries of Robyn's treatment sessions using the 'feeling and body investigator' model (Zucker 2017, 2019, 2023).

pain is very limited and disappointing. In many cases the side-effects of the medication make symptoms worse. Variations and imbalance in the gut microbiome is the next frontier in medicine and

there are compelling arguments highlighting the importance of the gut microbiome in maintaining good mental and physical health. An individual's microbiome is likely to have a role in functional

### **BOX 2** Common-sense lifestyle modifications with the best evidence for achieving optimal gut function

- Eat a varied diet that includes plenty of fruit and vegetables
- Consume regular meals
- Consume adequate fibre
- Drink plenty of water
- Avoid artificial sweeteners, fizzy drinks and highly processed foods
- Reduce sugar consumption
- Maintain an appropriate weight for height
- Remain in neither a significantly positive or negative energy balance
- Sleep well
- Take plenty of exercise
- Prioritise emotional well-being

(Nagpal et al, 2019)

gut symptoms. Unfortunately, the evidence for specific intervention, such as probiotics, remains limited and oversimplistic. There is weak evidence from one randomised controlled trial cited in Andrewes et al 2020 that non-specific gastrointestinal symptoms improve more on probiotics than on placebo, but the number needed to treat was 12 for 1 person to benefit. Anecdotally, over-the-counter probiotics do seem effective in a small proportion of children with persisting functional gastrointestinal pain.

In many ways, the best chance of cure comes from effective reassurance that no other pathology is being missed and full engagement in a holistic approach to getting better by addressing psychological/environmental drivers (van Tilburg 2018).

#### **Psychosocial treatments**

The psychosocial interventions with the strongest empirical support for abdominal pain are cognitive-behavioural therapy (CBT) and hypnotherapy. There is also some evidence that CBT targeting parental responses to the child's pain is effective.

#### **Cognitive-behavioural therapy (CBT)**

A recent systematic review and meta-analysis (Gordon 2022) described five CBT interventions with the most stringent evidence of efficacy in comparison with an active treatment that controlled for attention and dose (Duarte 2006; Levy 2010, 2017; Walker 2021; Warschburger 2021). The review concluded that CBT outperformed comparators in overall treatment success and in reduction of pain intensity and frequency, describing the

evidence for CBT for abdominal pain as 'extremely compelling'.

Although challenges remain in addressing treatment non-response and improving treatment accessibility, recent innovations for psychosocial approaches aim to make them more streamlined (Levy 2017; Lalouni 2019; van Tilburg 2021), easier to disseminate, for example online (Lalouni 2019; Walker 2021), effective for patient groups with more challenging problems (Walker 2021) and encompassing psychiatric comorbidities (Cunningham 2021). We will explore some of these recent innovations and describe recent adaptations of CBT approaches for younger children, including interventions that attempt to change a child's relationship with their body (Zucker 2017).

The overriding goal of CBT for paediatric abdominal pain is to guide the whole family in how to create experiences that reduce catastrophic and distressing beliefs about pain and thereby improve the health, functioning and quality of life of the child and their family.

**Box 3** summarises the components of several CBT interventions for functional abdominal pain.

In a randomised controlled trial Lalouni et al centred their exposure-based CBT intervention on not letting pain get in the child's way (Lalouni 2021). In accordance with the fear and avoidance model of pain (Crombez 2012) exposure-based CBT targets a child's fear of their symptoms by encouraging the child, with parental support, to work through situations that are avoided owing to a fear of pain. Lalouni et al reported that treatment effects in the CBT arm were mediated by both reductions in anxious reactions to gut sensations and decreased avoidance of situations or behaviours that elicit gastrointestinal sensations.

Zucker et al designed a seemingly paradoxical strategy with young children: the children were encouraged to deliberately focus their attention on bodily sensations, including pain, but the quality of their attention was manipulated (Zucker 2017). As described with Robyn above, children were trained to be 'feeling and body investigators' and bodily sensations were intentionally provoked in session and treated as clues to a mystery. Zucker et al argued that in young children, who are learning to decipher the meaning of their diverse bodily sensations, teaching them to be curious about their symptoms and to pay attention to their pain may help them to develop self-awareness and emotion regulation. Indeed, they found this strategy decreased pain distress, pain frequency and duration in children 5–9 years of age.

#### **Hypnotherapy**

Hypnosis can be defined as 'a social interaction in which one person, the subject, responds to suggestions

### BOX 3 Examples of components of psychosocial treatments for functional abdominal pain in children

We show here examples from various cognitive–behavioural approaches: this is not an exhaustive list of strategies or of the interventions that employ them.

#### Psychoeducation

- Educate about chronic pain
- Educate about stress and negative emotions (Walker 2021)
- Educate about what different normal emotions and bodily states (e.g. hunger) feel like. Treat visceral sensitivity as a super-power (Zucker 2017)
- Explain the fear avoidance model of pain (Lalouni 2017)
- Explain the gate-control theory of pain (Warschburger 2021)

#### Behavioural components

Strategies to address social influences/operant conditioning:

- evaluate the reactions of family members, teachers and caregivers that may inadvertently negatively or positively reinforce the child's pain behaviours or pain beliefs and modify with more adaptive responses (Duarte 2006);
- teach parents to differentially attend to and reinforce wellness behaviours (i.e. behaviours that are inconsistent with being or acting ill or impaired) and to decrease attention and reinforcement of illness behaviours related to abdominal pain; teach parents to role-model healthy responses to somatic symptoms and reduce catastrophising beliefs and threat appraisals of pain (Levy 2017);
- help parents use attention and praise to increase positive coping in the child; use reward to increase positive coping and help parents set school goals; get parents to role-model coping behaviours (Lalouni 2019);
- teach parents to help their children use 'body investigations' to explore, decode and respond to their bodily sensations; get parents to role-model curiosity towards bodily sensations generally;
- ask parents to identify their own parenting style in terms of the balance of warmth and firmness (e.g. permissive, authoritative) and adapt it if necessary to what works (Zucker 2017);
- ask parents to encourage their child to participate in in-session treatment exercises that may involve intentionally provoking gastrointestinal sensations, decrease their attention to symptom complaints and increase attention to more adaptive behaviours (Lalouni 2017).

Relaxation/exercise:

- to promote the child's relaxation encourage physical exercise (e.g. walks, swimming, cycling, running around the block or the home, shadow boxing); teach relaxation-breathing exercises to minimise overactivity of the sympathetic nervous system during pain episodes by muscle relaxation, with the objective of increasing activity (Duarte 2006);
- teach deep breathing and relaxation (Walker 2021);
- teach cue-controlled relaxation and progressive muscle relaxation (Warschburger 2021);
- help children plan pleasant events and activities (Walker 2021).

#### Exposure-based elements

In-session:

- children practise using mindfulness skills and then apply them to in-session symptom-like provocations (e.g. wearing tight clothes) (Zucker 2017);
- children develop body investigations that are designed to provoke a bodily sensation they just learned about; investigations are designed to learn something new about what the body can do (e.g. they can run faster than predicted, even when uncomfortable) (Zucker 2019).

Out-of-session:

- children are instructed to use coping skills at school (Lalouni 2016);
- children create a hierarchy of situations and activities that were avoided owing to fear of pain and systematically approach these situations (Levy 2010);
- children design an investigation to face an upcoming challenge and see what bodily sensations they notice (Zucker 2017).

#### Cognitive components

- Thought stopping: simple phrases are developed to automatically combat negative thoughts or beliefs about pain (Levy 2010)
- Cognitive restructuring: the child and the parents learn to reduce catastrophising or threatening appraisals of pain by examining evidence that counter fears about the consequences of the pain (Thapar 2020)
- Distraction: strategies are used that shift attention away from experienced pain and towards more pleasant activities (e.g. singing, playing video games) (Duarte 2006)

offered by another person, the hypnotist, for experiences involving alterations in perception, memory, and voluntary action' (Kihlstrom 2016).

Hypnotherapy includes information about the mind–body connection, with an emphasis on the mind's ability to regulate bodily functions. After a

hypnotic induction, patients are given suggestions to control abdominal pain, such as visualising a normal working gut using familiar metaphors such as a car running at normal speed.

Hypnotherapy sessions for P-FGIDs include psychoeducation about the link between stress and abdominal pain and skills in relaxation, imagination and developing self-awareness. Children are guided into a hypnotherapeutic trance that aims to increase their well-being, their sense of bravery and their efficacy in managing pain by closing the ‘pain gate’. Hypnotherapeutic interventions contain a multicomponent skills package and are therefore similar to CBT.

The mechanisms by which hypnotherapies exert effects are poorly understood, but changes in the focus and quality of attention may be the important components (Lynn 2019). There is low certainty about the efficacy of hypnotherapy, owing to the small number of studies; nevertheless, it seems the number needed to treat may be similar to that for CBT, suggesting that hypnotherapy holds some promise for some individuals (Gordon 2022).

#### CBT targeting parental response

Most CBT packages for children with FAPDs include guidance for parents on observing and modifying how they respond to their child’s pain. Two studies have evaluated parent-only CBT specifically targeting this response. As described in Levy et al (2017) and van Tilburg et al (2021), parents were taught how to reduce their over-anxious behaviours in response to their child’s pain and helped to alter their own catastrophic beliefs about pain, to model adaptive responses to their own somatic symptoms, and to reinforce wellness behaviours and adaptive coping in their child. These studies have shown that anxious over-concern in parents encourages avoidance of activities by the child. For example, an item on the Protect subscale of the Adult Responses to Children’s Symptoms (ARCS) scale reads: ‘When your child has abdominal pain, how often do you tell your child that s/he does not have to finish all of his/her homework?’ The potency of parent-focused approaches is shown by van Tilburg et al’s (2021) study, which reported a reduction in the children’s experience of pain and an improvement in their overall functioning via a parent-only intervention.

#### Conclusions

Paediatric functional gastrointestinal disorders (P-FGIDs) are extremely common, but they are heterogeneous. Studies have shown that acceptance by both parents and children of the ‘potent role’ of biopsychosocial factors in pain is strongly associated with a positive prognosis (Schechter 2021).

Hopefully, we have demonstrated that the strongest evidence for effective therapy for P-FGIDs comes from psychological treatments, but there is also some evidence for biomedical approaches and an integrated treatment model is therefore optimal (van Tilburg 2018).

#### *Challenges in managing P-FGIDs: stigma, lack of specialists, access to care*

There are numerous challenges in managing P-FGIDs and functional disorders in general. Doctors are often nervous about missing a diagnosis and they are more likely to practise defensive medicine if the parents are highly anxious and critical. Often the child and parents are left feeling bewildered and unheard, and they are told all the things that it is not, but not given a coherent explanation of why the child is experiencing the symptoms. Doctors need to be educated and empowered to make P-FGIDs a positive diagnosis, rather than a diagnosis of exclusion, as this is a validating strategy that will facilitate improved patient–provider communication.

Further challenges include stigma associated with functional disorders. If patients feel they are being dismissed and told, ‘It’s all in your head’, this is unhelpful and invalidating. By offering an integrated treatment model, we are moving away from a reductionist approach and mind–body separation. Unfortunately, hospitals are set up in such a way that there are very specific and separate referral mechanisms for different specialties. By separating physical and mental health, it is much harder to offer an integrated approach, but not impossible. Working and training junior doctors together to offer more of a holistic pathway, and having joined up care to follow up cases together, has by far the strongest evidence base.

In addition, there are far too few highly trained specialists to deal with the number of children and young people with P-FGIDs. Moreover, research suggests that even within specialist services there is inadequate implementation of evidence-based treatments, and clinicians need skills-based supervision to deliver the most effective interventions for P-FGIDs (i.e. those that include exposure treatments) rather than those with which they are most comfortable.

Discovering how to effectively disseminate effective interventions by making them shorter (Levy 2017), delivering them online (Lalouni 2019; Walker 2021), in groups (Warschburger 2021), or focusing expert interventions on the individuals who most need specialised care (Walker 2021) are examples of innovations that can improve and provide better access to care. One team (Walker

2021) developed a classification for patient subgroups which aims to address the heterogeneity within patients suffering from P-FGIDs. Matching individuals to the intensity of treatment required for their symptom profile and severity is an exciting new direction for paediatric pain.

### *P-FGIDs as a risk marker for later psychiatric illness*

Finally, there is emerging evidence that P-FGIDs are a clinically useful risk marker for predicting later psychiatric difficulties (Stein 2017, 2021). With the growth of the new concept of embodied cognition, there is growing interest in a novel group of interventions that attempt to alter a young person's experience of their body. Dance, yoga (Philipson 2020), biofeedback (Schurman 2010) and interoceptive exposure using the feeling and body investigators model (Zucker 2017) are all examples of ways in which a child may engage with their body differently. Research into the efficacy of these strategies (relative to active comparators) is ongoing but they may prove an effective alternative for younger children who are less aware of their cognitions. Such body-focused interventions may also be helpful for those young people who are more resistant to cognitively focused strategies for their abdominal pain, including those on the autism spectrum or suffering from co-occurring trauma.

### *Clinical implications*

Paediatric functional gastrointestinal disorders (P-FGIDs) are extremely common, require an integrated approach to treatment and may provide an opportunity to address wide-ranging emotion dysregulation in young people. Recent reports suggest that nearly a quarter of 14-year-old girls will have self-harmed in the past year (Patalay et al 2021) and newspapers report a 'crisis in children's mental health' (Children's Society 2022). With paediatricians seeing many more mental health presentations and child and adolescent mental health services increasingly stretched, there is a growing need for closer working across disciplines. By intervening early and enabling young people to be less fearful of and more curious about their bodily sensations, we may be able to alter harmful illness trajectories in both pain and psychiatric domains.

### **Data availability**

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

### **Author contributions**

Conceptualisation: K.S., L.H. and N.Z. Project administration: K.S. Supervision: L.H. and N.Z.

Writing original draft: K.S. Diagrams: N.Z. Writing, review and editing: K.S., L.H. and N.Z.

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### **Declaration of interest**

None.

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### MCQ answers

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## MCQs

Select the single best option for each question stem.

**1** What proportion of children have FGIDs and approximately what proportion of these have gastrointestinal symptoms that carry on to adulthood?

- a 25% and 40%
- b 40% and 65%
- c 10% and 2%
- d 15% and 80%
- e 12% and 20%

**2** Treatment goals for children with for FGIDs should focus on:

- a finding a causal factor for the disorder
- b getting them back into school
- c symptom reduction
- d reducing the functional disability
- e symptom reduction and reducing functional disability.

**3** An 8-year-old child complains of ‘tummy pain’. He avoids a range of situations and activities, which is affecting his ability to function socially and academically. He is eliminating a range of foods from his diet for fear they will cause pain and he has lost weight. What is the next step?

- a Assess him for signs and symptoms of malnutrition and vitamin deficiency
- b Screen for coeliac disease
- c Request teachers’ reports from his school
- d Enrol him on an exposure-based treatment for somatic symptoms
- e All of the above.

**4** Which of the following pharmaceutical treatments has a good evidence base for treatment of functional abdominal pain in children?

- a Anti-spasmodics, e.g. hyoscine butylbromide
- b Proton pump inhibitors, e.g. omeprazole
- c Analgesia
- d Amitriptyline
- e None of the above.

**5** Why might changing the quality of their attention (e.g. from fear to playful curiosity) be a developmentally appropriate strategy for FGIDs in younger children?

- a Distraction techniques (as opposed to focused curiosity) can prevent younger children from detecting and understanding the messages their bodies are communicating
- b It is fun, accessible and acceptable to children
- c It helps children to be less fearful of intense sensations
- d It enhances a child’s curiosity about what their body is capable of
- e All of the above.