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The Prevalence of Hypermobility in Children with Irritable Bowel Syndrome and Functional Abdominal Pain Is Similar to that in Healthy Children

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Objectives To test the hypothesis that the prevalence of joint hypermobility is greater in children with irritable bowel syndrome and functional abdominal pain than in healthy control children and is related to gastrointestinal symptoms and psychosocial distress (anxiety, depression, and somatization).

Study design Children (irritable bowel syndrome, n = 109; functional abdominal pain, n = 31; healthy control, n = 69), 7-12 years of age completed prospective 2-week pain and stooling diaries and child- and parent-reported measures of anxiety, depression, and somatization. Joint hypermobility was determined using Beighton criteria (score of ≥4 or 6). We also examined possible relationships between Beighton score, race, body mass index, gastrointestinal symptoms, and psychosocial distress.

Results Beighton scores were similar between groups, as was the proportion with joint hypermobility. Scores were higher in girls (3.1 ± 2.4) than boys (2.3 ± 1.8; P = .004) and decreased with age (P < .001; r = −0.25). Race and body mass index did not impact joint hypermobility prevalence. Beighton scores were not related to abdominal pain or stooling characteristics. Participants with a score of ≥4 and ≥6 had greater somatization and depression by child report (P = .017 and P = .048, respectively). No association was seen for anxiety. There was no significant association between joint hypermobility and psychosocial distress measures per parent report.

Conclusions Contrary to the adult literature, the prevalence of joint hypermobility does not differ among children with irritable bowel syndrome, functional abdominal pain, or healthy control children. The presence or severity of joint hypermobility does not correlate with abdominal pain or stooling characteristics. Somatization and depression by child report appear to have a relationship with joint hypermobility. *(J Pediatr 2020;222:134-40)*.

Recurrent abdominal pain is a common complaint affecting up to 15%-20% of school age children and adults worldwide.[1-3] The majority are considered to have a functional gastrointestinal (GI) pain disorder: irritable bowel syndrome (IBS), functional abdominal pain not otherwise specified (FAP), or functional dyspepsia.[4] FAP is characterized by intermittent abdominal pain; when associated with an altered stooling pattern, it is denoted as IBS.[4]

Joint hypermobility, defined as greater than normal joint laxity across multiple joints as measured by the Beighton score, may exist on its own or be part of the diagnostic criteria for joint hypermobility syndromes such as Marfan and Ehlers-Danlos syndromes.[5-9] Studies suggest that children are more hypermobile than adults and females more hypermobile than males.[10,11] Similarly, data suggest that joint hypermobility may be related to body mass index, and race and/or ethnicity, with those of Asian and African descent more hypermobile than Caucasians.[5,11,12]

Studies in adults suggest the prevalence of joint hypermobility is greater in patients with IBS and/or in patients with GI symptoms than in healthy controls.[13-15] Conflicting data exist on the prevalence of joint hypermobility in children with IBS.[16,17] What is known is that children in general with joint hypermobility experience greater pain intensity compared with healthy controls and it is thought that joint hypermobility may contribute to GI symptoms in adult IBS.[14,15,18] Interpretation of these studies is limited by factors such as their retrospective nature, the use of questionnaires to identify joint hypermobility and the type of functional GI disorder, and lack of differentiation between functional GI disorder subtypes.[13-17]

Limited data suggest a potential relationship between joint hypermobility and psychosocial distress in adults and children.[19-21] Adults and children with functional GI disorders have increased psychosocial distress compared with healthy

FAP	Functional abdominal pain not otherwise specified
GI	Gastrointestinal
IBS	Irritable bowel syndrome

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individuals.[22-24] Whether there is a relationship between joint hypermobility and psychosocial distress in children with IBS or FAP has not been evaluated to our knowledge.

Our aim was to compare the prevalence of joint hypermobility in children with IBS and FAP with that in healthy control children using direct measurement of joint mobility. We also sought to evaluate whether joint hypermobility was associated with psychosocial distress and/or prospectively collected GI symptoms. We hypothesized that joint hypermobility prevalence is greater in children with IBS and FAP than in healthy control children and that joint hypermobility is related to GI symptoms and psychosocial distress (anxiety, depression, and somatization).

Methods

Children (7-12 years of age) were recruited from the Texas Children's Hospital healthcare network based in Houston, Texas. Informed consent was obtained from parents, assent was obtained from children, and the study approved by the Baylor College of Medicine Institutional Review Board.

Design

Medical charts were reviewed by trained research coordinators using *International Classification of Diseases, 9th edition,* codes for abdominal pain and IBS to identify children with IBS and FAP, and well-child visit codes (eg, immunizations, school check-ups) to identify healthy controls. Participants then were screened via telephone and using a modified (shortened) pediatric Rome III questionnaire.[25,26] Children were excluded if chart review or screening revealed a significant chronic medical condition (eg, diabetes, cystic fibrosis), chronic vomiting, unexplained weight loss, hematochezia, major GI tract surgery, significant developmental delay, or organic GI disorder.

Participants were scheduled for a home visit or to come to the Children's Nutrition Research Center (depending on family preference). At that visit they completed psychosocial questionnaires (discussed elsewhere in this article) and were assessed for the presence of joint hypermobility (discussed elsewhere in this article). Weight and height were obtained.

Families then received detailed instructions on how to complete a validated 2-week pain and stooling diary.[27,28] Using the 2-week pain and stooling diary, participants were rigorously classified as IBS, FAP, or healthy control using a previously validated algorithm.[26] IBS was subtyped as previously described.[29] Using the Bristol Stool Form scale, constipation was defined as a rating of 1-2, normal as 3-5, and diarrhea as 6-7.[28]

Psychosocial Distress Measures

The Behavioral Assessment System for Children, Second Edition measures child emotional and behavior problems and competence using age and respondent-dependent measures.[30] The instrument is well-validated and in widespread use with versions for child self-report and parent report of child behaviors. Scale and composite scores are expressed in T-scores. For this study we used the anxiety and depression subscales for both child self-report and parent (mother)-report of the child. A T-score of ≥60 is considered at risk and a T-score of ≥70 is considered clinically significant.

Somatization was measured using the Children's Somatization Inventory. The frequency and severity of 24 somatic symptoms taken from *Diagnostic and Statistical Manual of Mental Disorders, 3rd edition,* revised, criteria for somatization disorder and the somatization factor of the Hopkins Symptoms Checklist are presented[31]; both the child (Children's Somatization Inventory) and mother (parent Children's Somatization Inventory) rate on a 5-point scale (from 0 [not at all] to 4 [a whole lot]) the extent to which the physical symptoms have bothered the child during the last 2 weeks. Total scores are then calculated.[32]

Testing for Joint Hypermobility

The research coordinators were trained in the use of the goniometer and determination of joint laxity as defined by Beighton.[7,33] The Beighton score ranges from 0 (none) to 9 (greatest hypermobility) and has been validated for use in children.[7,8,33] Debate continues regarding the appropriate cutoff to define joint hypermobility.[6,33] A recent study in children used the traditional cutoff of ≥4 and also ≥6.[5] Another pediatric study also suggested a less strict cutoff of ≥4.[33] A recent systematic review of adult and pediatric data suggested a cutoff of ≥6 for children.[34] Thus, we used both cutoff values.

Sample Size

The necessary sample size was determined based on a previous study in children with functional GI pain disorders and an adult study of patients with IBS.[14,16] The studied sample size was adequate to detect a difference in Beighton score between children with IBS/FAP and healthy control children with a P value of <.05 and a power of 0.95 and for detecting a difference in the proportion of children with/without joint hypermobility (cutoff of 6) with a P value of <.05 and a power of 0.95.

Statistical Analyses

Data presented in tables are expressed as mean ± SD. Differences in demographics were tested using the Student t test. Proportions were tested using χ^2 analysis. Beighton scores were not normally distributed, so they were log transformed. The raw data are shown. To evaluate the possible effects of age, sex, race, and ethnicity on the Beighton score, general linear modeling was used. A P values of <.05 was considered significant.

Results

Participants

Sex, age, body mass index, race, and ethnicity were comparable among the groups (**Table I**). The majority of children with IBS were categorized as constipation subtype and unsubtyped (IBS-constipation, n = 47; IBS-diarrhea, n = 10; IBS-mixed, n = 6; IBS-unsubtyped, n = 46).

Table I. Demographics of participants

Characteristics	IBS (n = 109)	FAP (n = 31)	Control (n = 69)	P value
Sex				.31
Male	41	13	34	
Female	68	18	35	
Age (y)	9.4 ± 1.4	9.4 ± 1.6	9.6 ± 1.5	.57
Race				.58
White	78	20	50	
Black	18	6	12	
Asian	8	0	0	
Native American/Hawaiian	0	1	0	
Mixed or unidentified	5	4	7	
Ethnicity				.90
Non-Hispanic	79	22	50	
Hispanic	30	8	19	
Unidentified	0	1	0	

Values are mean ± SD.

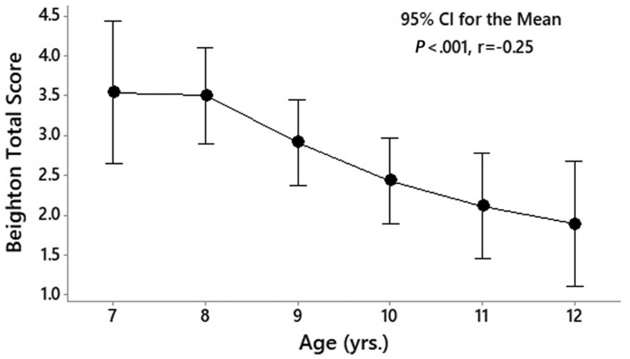

Figure. Relationship between Beighton score and age. Beighton score decreased with advancing age.

Joint Hypermobility and Sex, Age, Race, and Body Mass Index

For the total sample across groups, Beighton scores were higher in girls than in boys (3.1 ± 2.4 vs 2.3 ± 1.8, respectively; P = .008) (**Table II**). The difference between boys and girls in the IBS group was significant (P = .023). The mean Beighton score was numerically higher for girls in the FAP group but the difference did not reach significance (P = .12). There was no difference between sexes in scores for the healthy control group. Older children had lower Beighton scores than younger children (**Figure**). There were no differences in the prevalence of joint hypermobility using either a cutoff value of ≥4 or ≥6 across racial or ethnic groups or related to body mass index (data not shown).

Joint Hypermobility in the IBS, FAP, and Healthy Control Groups

Beighton scores were similar among the groups and this lack of difference remained even when taking into account age and sex (P = .6). No significant differences emerged for comparisons of Beighton scores between groups (**Table II**).

The proportion of children with joint hypermobility as defined by Beighton scores of ≥4 did not differ between the groups: IBS, 35%; FAP, 36%; and healthy controls, 36% (P = .98). Proportions also were similar when using a Beighton score cutoff of ≥6: IBS, 12%; FAP, 13%; and healthy controls, 9% (P = .74).

Abdominal Pain and Stooling Characteristics

As expected, the number of abdominal pain episodes and pain severity over the 2-week period of the diary were greater in the IBS and FAP groups compared with those in the healthy control group. No differences in pain measures between IBS and FAP groups were found (**Table III**; available at www.jpeds.com). The number of stools passed was greater in the IBS vs FAP and healthy control groups with no differences between FAP and healthy control. The percent of stools rated as diarrhea was greater and the percent of stools rated as normal was less in the IBS vs healthy control group but not vs the FAP group.

Beighton Scores and Abdominal Pain and Stooling Characteristics

For all participants across groups, Beighton scores did not correlate with the number of abdominal pain episodes or pain severity (**Table IV**; available at www.jpeds.com). This also was the case when evaluating just the IBS and FAP groups individually (data not shown). There was no difference in the number of abdominal pain episodes between those children with a Beighton score of ≥4 vs <4 or those with scores of ≥6 vs <6. Similarly, abdominal pain

Table II. Beighton scores

Characteristics	IBS (n = 109)	FAP (n = 31)	Healthy controls (n = 69)	Total sample (n = 209)	IBS vs FAP	IBS vs healthy controls	FAP vs healthy controls
By sex							
Boys	2.2 ± 1.7	2.5 ± 2.0	2.2 ± 1.8	2.3 ± 1.8	–	–	–
Girls	3.1 ± 2.4	3.6 ± 2.4	3.1 ± 2.4	3.1 ± 2.4	–	–	–
P value*	.023	.12	.57	.008	–	–	–
Cohen d	0.5	0.6	0.15	0.4	–	–	–
By group	2.7 ± 2.2	3.1 ± 2.3	2.6 ± 2.1	P = .7	P = .43	P = .98	P = .45

Values are mean ± SD.
*Boys vs girls.

severity did not differ between those children with a Beighton score of ≥4 vs <4 or those with scores of ≥6 vs <6.

Beighton scores did not correlate with the number of bowel movements or with the proportion of stools rated as constipated, normal, or diarrheal. Again, this also was the case when evaluating the IBS and FAP groups individually (data not shown). There were no differences in stooling characteristics (ie, number of bowel movements, stools rated constipated, normal, or diarrheal) between those children with a Beighton score of ≥4 vs <4 or those with scores of ≥6 vs <6.

Psychosocial Distress

As expected, anxiety, depression, and anxiety by both child and mother report were greater in the IBS and FAP groups compared with healthy controls (**Table V**; available at www.jpeds.com). Only somatization (by child report) differed between the IBS and FAP group, being greater in the former (P = .025). The mean scores for anxiety and depression were below the mean of a normative sample.[30] The somatization scale has no normative range.[31]

Beighton Scores and Psychosocial Distress

Beighton scores did not correlate with child- or mother-report of anxiety, depression, or somatization (**Table VI**). However, those with a Beighton score of ≥4 had higher scores for child report of somatization than those with a score of <4. Similarly, those with a Beighton score of ≥6 had greater scores for child report of depression than those with a score of <6. Child report of anxiety did not differ by a Beighton score cutoff of ≥4 or 6. Mother report of anxiety, depression, or somatization did not differ by a Beighton score cutoff of ≥4 or 6.

Discussion

We found no differences between children with IBS, FAP, and healthy control children in Beighton scores (**Table II**) or in the prevalence of joint hypermobility using cutoffs of ≥4 or ≥6. We did find that Beighton scores were related to sex and age, even within the narrow age range that we studied (**Table II** and **Figure**). Thus, as suggested by this and previous research, age and sex need to be considered when assessing the potential presence of hypermobility.[10,11] We also found that child report of somatization was greater in those children with a Beighton score of ≥4 and child report of depression was greater in those with a Beighton score of ≥6 (**Table VI**).

There has been interest in the possible association between joint hypermobility and functional GI pain disorders given that patients in general with joint hypermobility are prone to experience greater GI and other pain (eg, musculoskeletal).[14,15,18] Indeed, it is well-recognized that patients with joint hypermobility syndromes (eg, Ehlers-Danlos syndrome, Marfan syndrome) commonly have GI symptoms (eg, abdominal pain, acid reflux, dyspepsia).[9,35] Hence, it has been suggested that patients with functional GI pain disorders be screened for joint hypermobility.[14-16]

Our results converge with those of Saps et al, in which a school-based study found no difference in hypermobility frequency among children with a functional GI pain disorder (n = 136) diagnosed by questionnaire vs healthy control children (n = 136).[17] Our results extend their findings into functional GI pain disorder subtypes, because we used prospective diaries rather than questionnaires to identify children as to whether they had IBS or FAP or were healthy controls given the greater reliability of diaries vs questionnaires for this purpose.[36,37] Prospective diaries also allowed us to examine the potential relationships between joint hypermobility and abdominal pain, stooling characteristics, and psychosocial distress, which previously had been understudied.

The prevalence of joint hypermobility in the healthy control in our study (36% for scores of ≥4) is comparable with that reported previously in healthy children of similar ages worldwide.[5,10-12,20] Similarly, the prevalence of joint hypermobility in healthy control children using a cutoff score of ≥6 (9%) is comparable with previous reports from Australia.[5,11]

Table VI. Beighton scores and psychosocial distress

Variables	Child report			Mother report		
	Anxiety	Depression	Somatization	Anxiety	Depression	Somatization
Beighton score, all participants*						
P value	.17	.15	.15	.94	.24	.24
r value	0.07	0.07	0.07	0.0	0.04	0.0
Beighton score by cutoff						
<4 (n = 167)†	48.5 ± 10.2	46.4 ± 7.5	19.2 ± 15.6	50.9 ± 11.8	48.0 ± 8.9	12.4 ± 12.6
≥4 (n = 86)	50.2 ± 11.0	47.1 ± 7.9	24.6 ± 19.2	50.4 ± 11.6	49.2 ± 10.4	11.2 ± 10.5
P value	.16	.51	**.017**	.77	.31	.45
Cohen's d	0.2	0.1	0.3	0.0	0.1	0.1
<6 (n = 224)	48.7 ± 10.4	46.3 ± 7.5	20.5 ± 16.8	50.6 ± 11.8	48.2 ± 9.3	12.0 ± 12.0
≥6 (n = 29)	52.4 ± 10.8	49.2 ± 8.2	25.2 ± 18.6	51.5 ± 11.5	49.9 ± 10.2	11.6 ± 11.2
P value	.07	**.048**	.16	.70	.36	.84
Cohen d	0.4	0.4	0.3	0.0	0.2	0.0

Values are mean ± SD unless otherwise indicated. Significant values in **Bold**.
*Correlation.
†Complete psychosocial measures not obtained for all participants.

In a retrospective chart review of children and young adults with a functional GI pain disorder, Kovacic et al reported that, of the 45 patients who had a Beighton score recorded, 56% met criteria for joint hypermobility.[16] They suggested that the prevalence of joint hypermobility was greater in a specialty practice than in the general population, although our results do not suggest this difference.[16] Their results may have been biased, however, given that only those with a suspicion of joint hypermobility may have been tested.[16]

A small number of studies in adults suggest there may be a relationship between joint hypermobility and GI pain disorders. Zarate et al reported that patients referred to a neurogastroenterology clinic completed a questionnaire to assess the possible presence of joint hypermobility.[13] Those with evidence of joint hypermobility had a greater prevalence of gastroesophageal reflux and bloating symptoms than those without questionnaire evidence of hypermobility.[13] Fikree at al performed Beighton testing in consecutive new patients attending a gastroenterology clinic.[14] Patients completed GI symptom, psychosocial, and quality of life questionnaires.[14] Adjusting for age and sex, heartburn, water brash, and postprandial fullness were more common in the joint hypermobility group.[14] In a later study, the same group compared the prevalence of joint hypermobility based on Beighton score in patients with functional GI pain disorders as defined by a questionnaire, with that in patients with organic GI disorders (eg, inflammatory bowel disease, erosive reflux disease).[15] After adjusting for age and sex, there was a relationship between the presence of joint hypermobility and the diagnosis of a functional GI pain disorder, but only the specific diagnosis of functional gastroduodenal disorders was significantly related.[15] In the organic group, a high prevalence of joint hypermobility was found in those with reflux disease.[15] The discrepancy between our results and the adult data may relate to differences in age and/or in the underlying pathogenesis of functional GI pain disorders in children vs adults.

To our knowledge, there are no data on the potential relationships between Beighton scores, the presence of joint hypermobility, and the severity of GI symptoms (ie, abdominal pain) and stooling characteristics. This is likely due to the fact that previous studies have relied on retrospective reporting in which symptom severity was not assessed. Our prospective diary data suggest no relationship between Beighton scores and GI symptoms.

There are few data on the potential relationship between psychosocial distress and joint hypermobility. In 1 adult study no difference was seen in the prevalence of anxiety, depression, or somatization in those with or without joint hypermobility.[14] In contrast, a systematic review and meta-analysis of 14 studies (n = 3957) published the same year suggested that individuals with joint hypermobility had a higher prevalence of anxiety and higher anxiety scores compared with those without joint hypermobility.[19] Similarly, the prevalence of depression also was greater, but the severity was comparable between those with or without joint hypermobility.[19] Few data are available for children. Ezpeleta et al reported on children 9 years of age who were part of a longitudinal study of behavior problems (n = 336); those with the greatest joint hypermobility had more severe anxiety symptoms.[20] In another study, joint hypermobility prevalence in 160 children recruited from a mental health clinic was 22%, with anxiety scores greater in those with joint hypermobility.[21] A subgroup had joint hypermobility syndrome (eg, Ehlers-Danlos syndrome), and in this group somatization (based on the Child Behavior Checklist) was greater than in those with joint hypermobility without a syndrome.[21]

In our study anxiety, depression, or somatization were not significantly correlated with Beighton score. However, children with a Beighton score of ≥4 had higher scores for child report of somatization and those with a Beighton score of ≥6 had higher scores for child report of depression (**Table VI**). We previously have shown the importance of somatization in the expression of abdominal pain in children with functional GI disorders.[38,39] It has been suggested that somatization may be magnified in individuals with joint hypermobility syndrome because of disordered autonomic nervous system function (eg, postural tachycardia syndrome) and a mismatch between cognitions and actual body state.[40] Our results suggest this may be the case in children with joint hypermobility occurring apart from joint hypermobility syndrome, although this finding requires confirmation in a future study, as does the finding related to depression.

With respect to study limitations, the results may only be representative of our center and would benefit from replication, although our inclusion of children from both tertiary and primary care should improve generalizability of the results. We evaluated for the presence of joint hypermobility using the Beighton criteria, but we did not inquire about other symptoms (eg, arthralgia) that would have allowed assessment for joint hypermobility syndrome (joint hypermobility associated with musculoskeletal symptoms in more than four joints, including pain over ≥12 weeks).[6,8]

Our study extends the literature through the use of improved methodology (prospective validated diary, subtyping of the functional pain disorder, and objective measurement of joint hypermobility), examination of the potential relationship between joint hypermobility and abdominal pain and stooling characteristics, and appraisal of the potential relationship between joint hypermobility and psychosocial distress using validated questionnaires. The use of the diaries is more reliable than retrospective questionnaires, allowing us to confidently separate IBS, FAP, and healthy control groups, in contrast with previous studies in which different subgroups of functional GI pain disorders were not identified or only identified by recall questionnaires.[13-17,36] Further, the use of a goniometer to determine joint laxity as defined by Beighton is a more robust method than questionnaire assessment.[34]

In summary, we found no evidence that children with IBS or FAP have joint hypermobility greater than that in healthy controls. The presence or severity of joint hypermobility do not seem related to abdominal pain or stooling characteristics in children with IBS or FAP. There was an association between the severity of joint hypermobility and somatization and depression by child report. Future studies evaluating the severity of joint hypermobility in children should include measures of somatization and depression to better understand these possible associations.

Although Beighton scores were similar among children with IBS, FAP, and healthy control children and the proportion of children with joint hypermobility did not differ among the groups, it should be noted that in an individual patient joint hypermobility may be present and may be accompanied by associated musculoskeletal symptoms that may contribute to the extraintestinal pain symptoms and disability often found in children with IBS and FAP. Similarly, it should be kept in mind that additional studies are needed to determine if older children with IBS and FAP (ie, outside of the age group in the current study) differ from healthy control children in terms of the presence of joint hypermobility. ■

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Data Statement

Data sharing statement available at www.jpeds.com.

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Table III. Abdominal pain and stooling characteristics

	Group			*P* values		
	IBS	FAP	Control			
Characteristics	(n = 109*)	(n = 40)	(n = 69)	IBS vs FAP	IBS vs healthy controls	FAP vs healthy controls
Abdominal pain						
No. of episodes	12.8 ± 9.1	11.4 ± 11.1	0.4 ± 0.6	.52	<.001	<.001
Severity (0-10)	3.1 ± 1.3	3.0 ± 1.3	1.2 ± 2.0	.68	<.001	<.001
Stooling						
No. of stools	13.2 ± 4.8	10.7 ± 4.8	11.8 ± 4.4	.012	.052	.25
% Constipation	27.4 ± 22.9	21.6 ± 25.3	23.7 ± 26.3	.26	.35	.70
% Normal	62.4 ± 24.5	71.1 ± 28.4	72.4 ± 26.8	.10	.01	.83
% Diarrhea	10.4 ± 15.8	8.0 ± 20.9	2.9 ± 6.6	.56	<.001	.19

Values are mean ± SD.
*Complete diary data not obtained from all participants.

Table IV. Beighton scores vs abdominal pain and stooling characteristics

	Abdominal pain			Proportion of stools (%)		
Variables	No. of episodes	Severity (0-10)	No. of bowel movements	Constipation	Normal	Diarrhea
Beighton score	*P* = .39	*P* = .70	*P* = .12	*P* = .12	*P* = .35	*P* = .4
All participants*	r = 0.0	r = 0.0	r = 0.1	r = 0.1	r = 0.0	r = 0.0
Beighton score by cutoff						
<4 (n = 139)†	8.7 ± 9.7	2.4 ± 1.7	12.5 ± 5.1	23.8 ± 25.3	68.4 ± 26.5	7.8 ± 16.0
≥4 (n = 79)	8.7 ± 9.8	2.5 ± 1.9	12.0 ± 4.0	27.2 ± 23.0	65.8 ± 25.2	7.0 ± 12.6
P value	.97	.76	.39	.33	.48	.70
Cohen d	0.0	0.0	0.1	0.1	0.1	0.1
<6 (n = 192)	8.4 ± 9.5	2.5 ± 1.8	12.4 ± 4.8	24.4 ± 24.4	67.8 ± 26.2	7.7 ± 15.1
≥6 (n = 26)	11.1 ± 11.3	2.4 ± 1.9	11.7 ± 3.8	29.4 ± 24.8	64.6 ± 24.8	6.0 ± 122.9
P value	.18	.72	.47	.33	.55	.59
Cohen d	0.3	0.1	0.2	0.2	0.1	0.1

Values are mean ± SD unless otherwise indicated.
*Correlation.
†Complete diary data not obtained on all participants.

Table V. Psychosocial distress measures

	Group			*P* values		
Measures	IBS	FAP	Control	IBS vs FAP	IBS vs healthy controls	FAP vs healthy controls
Child report	(n = 106)	(n = 30)	(n = 64)	–	–	–
Anxiety	51 ± 11	48 ± 11	44 ± 8	.31	<.001	.02
Depression	48 ± 9	46 ± 7	44 ± 5	.31	<.001	.07
Somatization	27 ± 19	20 ± 13	12 ± 13	.025	<.001	.001
Parent report	(n = 109)	(n = 30)	(n = 68)	–	–	–
Anxiety	52 ± 12	54 ± 11	46 ± 9	.33	<.001	.001
Depression	50 ± 10	50 ± 8	45 ± 9	.81	<.001	.015
Somatization	15 ± 11	17 ± 11	3 ± 6	.48	<.001	<.001

Values are mean ± SD.