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Effect of Autogenic Training on General Improvement in Patients with Irritable Bowel Syndrome: A Randomized Controlled Trial

Masae Shinozaki · Motoyori Kanazawa · Michiko Kano · Yuka Endo · Naoki Nakaya · Michio Hongo · Shin Fukudo

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Abstract Autogenic training (AT) is a useful and comprehensive relaxation technique. However, no studies have investigated the effects of AT on irritable bowel syndrome (IBS). In this study we tested the hypothesis that AT improves symptoms of IBS. Twenty-one patients with IBS were randomly assigned to AT ($n = 11$, 5 male, 6 female) or control therapy ($n = 10$, 5 male, 5 female). AT patients were trained intensively, while the control therapy consisted of discussions about patients' meal habits and life styles. All patients answered a question related to adequate relief (AR) of IBS symptoms and four questionnaires: Self-induced IBS Questionnaire (SIBSQ), Self-reported Depression Scale (SDS), State-Trait Anxiety Inventory (STAI), and Medical Outcome Short Form 36 Health Survey (SF-36). The proportion of AR in the last AT session in the AT group (9/11, 81.8%) was significantly higher than that in the controls (3/10, 30.0%, Chi-square test, $p = 0.048$). Two subscales of the SF-36, i.e., social functioning and bodily pain, were significantly improved in the AT group ($p < 0.05$) as compared to the control group. Role emotional ($p = 0.051$) and general health ($p = 0.068$) showed a tendency for improvement in the AT group. AT may be useful in the treatment of IBS by enhancing self-control.

Keywords Adequate relief (AR) · Autogenic training (AT) · Irritable bowel syndrome (IBS) · Quality of life (QOL) · Randomized controlled trial (RCT)

Abbreviations

SIBSQ	Self-reported Irritable Bowel Syndrome Questionnaire
SDS	Self-reported Depression Scale
STAI	State-trait anxiety inventory
SF-36	Medical Outcome Short Form 36 Health Survey
PF	Physical functioning
RP	Role physical
BP	Bodily pain
GH	General health
VT	Vitality
SF	Social functioning
RE	Role emotional
MH	Mental health

Introduction

Irritable bowel syndrome (IBS) is a very common gastrointestinal disorder characterized by recurrent abdominal

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pain and altered bowel habits without major organic diseases as assessed by routine gastroenterological examination (Drossman 2006). The prevalence of IBS in the general population is high in western countries as well as in Japan (Thompson et al. 2002; Kanazawa et al. 2004). In addition, IBS is recognized as one of the most common diseases in primary care (Thompson et al. 2000). Rome III diagnostic criteria based on subjective gastrointestinal (GI) complaints is the current standard for IBS diagnosis (Drossman 2006; Longstreth et al. 2006a, b).

Although regarded as a digestive disease, IBS is a syndrome that fits well the definition of a biopsychosocial model, in which the relationship between physiological factors, GI symptoms, psychosocial factors, and clinical outcome reciprocally influence their expression (Drossman 2006). These phenomena are conceptualized as a "brain-gut" interaction (Fukudo et al. 1993). From the psychosocial viewpoint, IBS has a negative impact on subjects' daily activity and quality of life as it incurs substantial health-care seeking (Drossman et al. 1993). Patients with IBS frequently show exaggerated gastrointestinal motility under stress (Fukudo et al. 1993), have psychiatric comorbidities, especially depressive disorders, anxiety disorders, and somatoform disorders (Drossman 2006), and reveal psychosocial risk factors including sexual/physical abuse, economical loss, and social withdrawal (Drossman 2006). Although several new pharmacological agents for IBS have been developed (Camilleri et al. 2000; Chey et al. 2004; Chang et al. 2005; Tack et al. 2005; Reilly et al. 2005), there are still patients who do not respond to pharmacotherapy (Levy et al. 2006). For these patients, psychotherapy might be useful. Therefore, the development of a treatment for IBS based on a biopsychosocial model is indispensable.

Hypnotherapy has been shown to improve IBS-induced GI symptoms (Whorwell et al. 1984; Gonsalkorale et al. 2003; Gonsalkorale et al. 2004; Lea et al. 2003), and is now a valid alternative in the treatment of IBS (American Gastroenterological Association 2002; Drossman et al. 2002; Drossman 1999). However, hypnotherapy requires a long treatment period and its success is highly dependent on the skills of the therapist. On the other hand, autogenic training (AT), which is often used to treat different types of psychosomatic disorders (Stetter and Kupper 2002), is easier for physicians and allied health providers to perform and more accessible than hypnotherapy. Besides, after a few sessions, it is possible for patients to carry out AT by themselves. Despite these advantages, there is no evidence that AT is effective in treatment of IBS symptoms. Based on this background information, we hypothesized in this study that AT would improve GI symptoms, negative emotion, and health related quality of life (HR-QOL) in patients with IBS.

Methods

Study Sample Size

The desired sample size in this study was calculated using $\alpha = 0.05$ significance level and $\beta = 0.75$. Based on our clinical experience, we hypothesized that the improvement rate in subjects that received autogenic training would be 85% and that the improvement rate in the control subjects would be 25%. The difference (d) between the AT and control groups can therefore be calculated as $d = 0.85 - 0.25 = 0.6$. With this assumption, the sample size in this study was estimated as 10.

Study Subjects

Out of all IBS outpatients who visited the Department of Psychosomatic Medicine in Tohoku University Hospital from December 2001 to July 2005, 21 patients (10 males and 11 females) were enrolled at random in this study. Eligible patients strictly fulfilled the Rome II criteria (Thompson et al. 1999). Before the beginning of this study, the patients completed a series of tests, including blood count, C-reactive protein blood chemical analysis, thyroid hormones test, thyroid stimulating-hormone test, urinalysis, fecal occult blood test, colonoscopy and/or Ba enema. After diagnosis of IBS, patients were prescribed trimebutrine or polycalbophil calcium. Probiotics for diarrhea, anticholinergics for abdominal pain, or laxatives for constipation were prescribed depending on the dominant symptoms. The drug prescribed to each patient was not changed during this study. After treatment for 8 weeks, patients were asked whether they had adequate relief (AR) or not (Camilleri et al. 2000). Only patients who showed no adequate relief were enrolled in this study. All patients gave informed consent, and this study was approved by the Ethics Committee of Tohoku University School of Medicine (No. 2001-223).

Pharmacotherapy Outcome

Subjects were asked to answer one oral question and complete four validated questionnaires. The oral question was used as a primary endpoint, and the four validated questionnaires were used as secondary endpoints for quantification of IBS (Irvine et al. 2006).

Adequate Relief

AR is clinically useful to assess improvement of abdominal pain and/or discomfort (Camilleri et al. 2000; Chey et al. 2004). In this study, AR addressed improvement in IBS-induced GI symptoms following pharmacotherapy with a

single question ("Did you have adequate relief of IBS-related abdominal pain or discomfort?") scored on a dichotomous scale. The question was asked during the patient's medical visit, and the answer was either "Yes" or "No".

Self-reported Irritable Bowel Syndrome Questionnaire

The self-reported irritable bowel syndrome questionnaire (SIBSQ) (Endo et al. 2000) is a validated disease-specific questionnaire. SIBSQ is based on the Rome II criteria and consists of 14 GI symptoms-related questions and seven additional questions. The 14 questions are related to the following: abdominal pain, discomfort, defecation frequency, improved pain or discomfort, gas or defecation state, existence of sticky stool, feeling of residual stool, bloating, straining, defecation urgency, anticipated anxiety because of bowel symptoms, abdominal dysfunction with perceived stress, and abdominal dysfunction after meal. The 14 GI symptom-related questions are used to evaluate severity of GI symptoms on a seven-point Likert scale (1: nothing at all, 2: almost nothing, 3: slightly present 4: present, 5: moderately present 6: severely present 7: extremely present). The sum of scores for the 14 GI symptoms-related questions gives a total score for SIBSQ.

The seven additional questions are used to obtain more detailed characterization of IBS symptoms (Appendix).

State-Trait Anxiety Inventory

The State-Trait Anxiety Inventory (STAI) (Spielberger et al. 1983) is a well-validated 40 item self-reported questionnaire. STAI is used to measure state anxiety (20 items) and trait anxiety (20 items), wherein subjects choose one of four levels of anxiety for each item. State anxiety reflects a "transitory emotional state or condition of the human organism that is characterized by subjective, consciously perceived feelings of tension and apprehension, and heightened autonomic nervous system activity." State anxiety may fluctuate over time and can vary in intensity. In contrast, trait anxiety denotes "relatively stable individual differences in anxiety proneness." The Japanese version of STAI has already been validated (Nakazato and Mizuguchi 1982).

Self-Rating Depression Scale

The Self-Rating Depression Scale (SDS) consists of 20 questions scored on four-point Likert scale (Zung 1965). The Japanese version of SDS is well-validated and commonly used (Fukuda and Kobayashi 1973).

Medical Outcome Study 36-Items Short-Form Health Survey

The Medical Outcome Study 36-Items Short-Form Health Survey (SF-36) is a non-specific questionnaire for health-related quality of life (HR-QOL) (Ware and Sherbourne 1992). The SF-36 consists of eight subscales as follows: physical functioning, role physical, bodily pain, general health, vitality, social functioning, role emotional and mental health. The Japanese version of SF-36 has been validated (Fukuhara et al. 1998; Fukuhara et al. 2001).

Autogenic Training

The Autogenic Training (AT) used in this study was based on the Schultz-style (Schultz 1987). AT was performed individually for eight sessions in eight weeks (Schultz 1987; Kermani 2001). Each session consisted of 30–40 min of full exercise. Although some studies described AT session time between a few minutes (Kermani 2001) and 60 min (Mitani et al. 2006), we gave priority to patient comfortableness (Kermani 2001). The standard session of AT used in this study is shown in Table 1 (Kermani 2001; Mitani et al. 2006). In brief, traditional AT consists of 6 standard exercises after the formula "I am at peace". The first exercise aims at muscular relaxation by repetition of a verbal formula, "My right arm is heavy" emphasizing heaviness. Subsequent passive concentration is focused on feeling warm, initiated by the instruction "My right arm is warm", followed by cardiac activity using the formula "My heartbeat is calm and regular". Then follows passive concentration on the respiratory mechanism with the formula "It breathes me", then on warmth around the abdominal region with "My solar plexus is warm" and finally on coolness in the cranial region with "My forehead is cool and clear" (Kanji and Ernst 2000).

Control Session

The control session was aimed at discussing diet therapy. The session time and frequency were the same as those in

Table 1 AT standard exercise

1. My right (left) arm (leg) is heavy
2. My right (left) arm (leg) is warm
3. My heart beat is calm and regular
4. It breathes me
5. My solar plexus is warm
6. My forehead is cool and clear
7. Cancellation

the AT sessions. All control patients were given the original textbook for the session. The table of contents for the textbook used in this study is shown in Table 2.

Procedure

The study protocol is shown in Fig. 1. About 21 eligible patients were randomly assigned to the AT group ($n = 11$, 5 males, 6 females) or the control group ($n = 10$, 5 males, 5 females). Patients in the AT group completed a standard course of AT sessions eight times. The interval between AT sessions was two to four weeks, depending on the patient's social situation. A specialized psychologist (MS) performed AT in a quiet, sheltered, temperature- and humidity-controlled room. During the interval between sessions, home-exercise was recommended. AT patients were given a set of explanatory leaflets and an audiotape for home exercise. Patients in the control group had discussions about their meal habits with the psychologist and were given booklets about meal habits to prepare for the discussion. The patients were not informed which group he/she would be assigned to. However, they were not completely blinded because they could understand the contents of treatments after the beginning of the intervention (Whitehead 2004).

Table 2 Table of contents for control session textbook

1. What is IBS?
2. Treatment of IBS
3. Nutrients and dietary fibers
4. Diet therapy for IBS
5. Diet therapy for diarrhea-predominant IBS
6. Diet therapy for constipation-predominant IBS
7. Diet therapy for alternating IBS
8. Summary

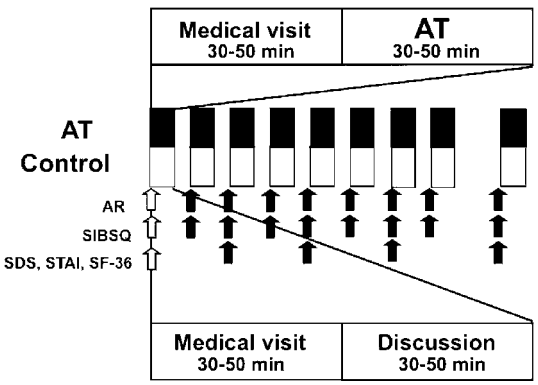

Fig. 1 Study protocol. The *white* and *black arrows* indicate points of measurement of Adequate Relief (AR), Self-reported Irritable Bowel Syndrome Questionnaire (SIBSQ), Self-reported Depression Scale (SDS), State-Trait Anxiety Inventory (STAI), and The MOS 36-item short-form health survey (SF-36). *Black square*—AT session (including details of the session). *White square*—control session (including details of the session). *White arrow*—point of measurement of baseline. *Black arrow*—point of measurement of a regular session

Statistical Analysis

The proportion of patients with AR was calculated and analyzed by Chi-square test. The difference of proportion of patients with AR, the rate ratio (RR) of AR between the AT and control groups, and the 95% confidence interval (95%CI) of these parameters were also calculated. Scores of before and after pharmacotherapy were compared using both analysis of variance (ANOVA) and Wilcoxon signed-rank test.

Results

Subjects Demographic Data

Demographic data for the patients are shown in Tables 3 and 4. No difference in age, sex, IBS subtype, SIBSQ, SDS, and STAI between the AT group and the control group was observed. In addition, SF-36 subscales were almost identical between the AT group and the control group. Only social functioning in the AT group was significantly lower than that in the control group ($p < 0.05$).

Adequate Relief

The proportion of patients with AR in the AT group (9/11, 81.8%) was significantly higher than that in the control group (3/10, 30.0%) in the last AT session as indicated by

Table 3 Subjects demographic data

Variable	AT ($N = 11$)	Control ($N = 10$)	p-Value
Demographic data			
Age	32.8 ± 2.8	30.3 ± 15.4	0.7
Sex			0.83
Male	5	5	
Female	6	5	
IBS subtype			0.58
Alternating	5	5	
Constipation	3	1	
Diarrhea	3	4	

Data are given as mean ± SD

Sex: degree of freedom = 1, p-value was calculated by a 2 × 2 Chi square

IBS subtype: degree of freedom = 2, p-value was calculated by a 2 × 3 Chi square

Table 4 IBS symptoms, negative emotion, and HR-QOL before and after treatment

	AT			Control		
	Baseline	End of treatment	*p*-Value	Baseline	End of treatment	*p*-Value
SIBSQ(Q1-14)	52.1 ± 11.6	48.9 ± 6.1	0.473	55.9 ± 13.9	36.3 ± 23.4	0.008*
SDS	46.4 ± 5.9	44.6 ± 7.4	0.315	45.9 ± 5.9	45.8 ± 9.4	0.553
STAI						
State anxiety	50.0 ± 9.1	47.2 ± 7.9	0.755	54.6 ± 11.0	51.4 ± 10.5	0.173
Trait anxiety	56.0 ± 8.1	54.5 ± 9.4	0.102	56.8 ± 11.4	52.8 ± 14.5	0.097
SF-36						
PF	47.7 ± 14.3	51.2 ± 8.3	0.600	48.9 ± 7.8	46.4 ± 13.7	0.655
RP	26.9 ± 18.9	35.6 ± 20.4	0.310	23.7 ± 19.2	33.8 ± 24.6	0.293
BP	36.8 ± 7.8	45.6 ± 11.7	0.012*	38.5 ± 9.6	41.3 ± 10.7	0.735
GH	30.9 ± 10.6	34.7 ± 9.4	0.069§	32.8 ± 10.4	33.8 ± 17.4	0.484
VT	35.4 ± 8.3	37.1 ± 6.6	0.463	36.6 ± 6.3	34.5 ± 10.7	0.097
SF	27.0 ± 12.0	41.1 ± 19.6	0.021*	43.4 ± 9.0	42.6 ± 15.7	0.866
RE	34.2 ± 14.5	46.4 ± 15.5	0.051§	33.9 ± 16.0	41.2 ± 18.2	0.575
MH	36.6 ± 9.0	42.0 ± 4.9	0.239	35.9 ± 8.5	35.6 ± 13.5	0.889

PF physical functioning, *RP* role physical, *BP* bodily pain, *GH* general health, *VT* vitality, *SF* social functioning, *RE* role emotional, *MH* mental health

Data are given as mean ± SD

* $p < 0.05$, § $p < 0.1$

Chi-square test ($\chi^2 = 5.74$, $p < 0.05$, Fig. 2). The difference of proportion of patients with AR in the last AT session was 51.8% and the 95%CI ranged from 17.0 to 86.6%. The rate ratio of AR between the AT group and the control group in the last AT session was 2.73 (95%CI, 1.02–7.32).

Also, the proportion of patients with AR in the AT group was significantly higher than that in the control group in the fourth ($p < 0.05$), seventh ($p < 0.001$), and eighth ($p < 0.05$) AT session.

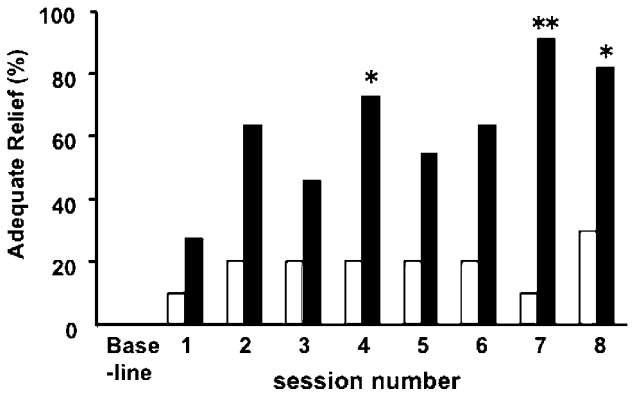

Fig. 2 AT-induced changes in adequate relief (%).*White bar*—control group ($n = 10$), *Black bar*—AT group ($n = 11$). * $p < 0.05$, ** $p < 0.001$: vs. control. Baseline means before the first session. The *white* and *black bars* indicate the proportion of adequate relief (AR) "yes". Session number is for both AT and control sessions

SIBSQ, SDS, and STAI

SIBSQ subscores, SDS, and STAI did not differ between the AT group and the control group (Table 4). ANOVA of SIBSQ total scores showed no significant difference between the AT group and the control group.

HR-QOL

No significant group effect, period effect, or group x period interaction in SF-36 subscores was detected by two-way ANOVA. However, some post-treatment SF-36 scores in the AT group significantly improved as indicated by Wilcoxon signed-rank test. Role emotional score ($p = 0.051$) and general health score ($p = 0.069$) tended to be improved only in the AT group (Table 4). Bodily pain score in the AT group significantly increased after treatment (45.6 ± 11.7) as compared with baseline (36.8 ± 7.8, $p = 0.012$, Table 4). In the control group, on the other hand, bodily pain score did not change throughout the study. Social functioning score in the AT group was significantly improved by treatment (baseline: 27.0 ± 12.0, after treatment: 41.1 ± 19.6, $p = 0.021$, Table 4). However, no change in social functioning score was detected in the control group. There were no significant changes in the other subscales of the SF-36 in both groups.

There was no difference in visiting interval between the AT group and the control group. Besides, no relationship

was noted between the length of visit interval and clinical effect.

Discussion

This is the first study to demonstrate that AT is effective in the general improvement of IBS. As shown in our results, the proportion of AR in the last AT session in the AT group was significantly higher than that in the controls. In addition, two subscales of the SF-36, i.e. social functioning and bodily pain, were significantly improved in the AT group as compared to the control group. Role emotional and general health showed a tendency for improvement in the AT group, although without statistical significance. SIBSQ, SDS, and STAI, on the other hand, did not differ between the AT group and the control group. AT has long been used as a relaxation technique (Günter and von Eye 2006), and has been reported to reduce anxiety (Kanji et al. 2006a; Jorm et al. 2004), chronic pain (Jensen and Patterson 2006), and headache (ter Kuile et al. 1994). AT has also been shown to improve some aspects of HR-QOL in patients with multiple sclerosis (Sutherland et al. 2005). However, systematic studies on headache, chronic pain, and anxiety indicate that the effects of AT on these conditions are limited (Jorm et al. 2004; Jensen and Patterson 2006; Sutherland et al. 2005). On the other hand, psychophysiological studies revealed that AT has a distinct effect on autonomic function (Kanji et al. 2006a, b; Sakakibara et al. 1994; Mishima et al. 1999). AT has been shown to increase cardiac parasympathetic tone (Sakakibara et al. 1994) and prolong the ECG R–R interval electrocardiogram (Kanji et al. 2006a, b; Mishima et al. 1999).

Emotional memory has two major forms: a conscious (explicit) memory for facts and personal events and an unconscious (implicit) memory for motor and sensory experience (Iversen et al. 2000). Autonomic function reflects typical implicit processing of emotion. Thus, grading GI symptoms, grading anxious symptoms, and grading depressive symptoms may mainly be executed by explicit brain processing, while judging AR may be based on implicit brain processing. Based on this reasoning, it is suggested that the effect of AT on general improvement of IBS is due to changes in implicit processing of emotion.

AT is one of the methods of self-induced hypnotherapy (Schultz 1987). Hypnotherapy has been used for treating refractory IBS (Whorwell et al. 1984; Whorwell 1989; Prior et al. 1990). Although the mechanism by which hypnotherapy affects IBS has not been clarified, there are several reports indicating that abdominal rectal sensitivity in IBS patients can be normalized by hypnotherapy (Lea et al. 2003; Prior et al. 1990). In addition, hypnotic suggestions are capable of changing activity of the anterior cingulate cortex as detected by positron emission tomography (Rainville et al. 1997). Therefore, the hypnotic element of AT, at least, may have changed rectal sensitivity and/or limbic brain activity in IBS patients in our study. The advantage of AT over usual hypnotherapy is that AT is easier to perform for therapists than hypnotherapy and that patients can acquire AT techniques and use them in their daily lives. Although we did not measure patients' self-efficacy in performing AT, AT might improve self-control resulting in more AR, less bodily pain, and improved social functioning. There are several protocols of hypnotherapy for IBS (Palsson 2006; Palsson et al. 2006) and gut directed hypnotherapy is one of them (Lea et al. 2003; Gonsalkorale 2006; Roberts et al. 2006; Smith 2006). In this study the AT used did not follow the gut-directed approach. However, it is of interest to search for what is the best method of inducing remission of IBS among the therapies in the hypnosis category.

In this study, socres for SIBSQ, anxiety, and depression did not change with AR. However, this is not surprising because in clinical trials of IBS, AR is not always proportional to the summation of individual GI symptoms (Irvine et al. 2006). In contrast, bodily pain score and social functioning of SF-36 were improved in the AT group. Patients with IBS in this study might regard QOL as a more important factor for AR than GI symptoms per se. This is because IBS is usually a chronic process and patients tend to have maladjusted coping style with catastrophizing (Drossman et al. 2002). In other words, most IBS patients have no adequate strategy to control their emotion and behavior before treatment. AT is one of the options that offer IBS patients a technique to control their emotion and behavior. In this study, self-efficacy may have been at the origin of improved social functioning. This notion can be examined in studies with larger sample sizes.

There are several limitations to this study. First, the degree of self-performed AT (AT home exercise) might have affected the results, although this possibility was not examined in this study. Second, longterm effects were not assessed. Although several anecdotal reports revealed effects of AT lasted for years, the long-term effects of AT clearly need to be quantified.

We believe we have shown in this study that AT may be a promising psychological treatment for IBS. Further studies with larger sample sizes and evaluation of the long-term effects of AT are warranted.

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Appendix

Self-reported Irritable Bowel Syndrome Questionnaire (SIBSQ)

(Date / /)

Name (male・female) age years old
(Date of birth / /)

Please read the following questions and choose one answer from the seven choices. Mark your answer with an open circle ○.

(1) Please answer all of the following 14 questions. In the last one week, you generally had・・・.

	nothing at all	almost nothing	slightly present	present	moderately present	severely present	extremely present
① abdominal pain.	1	2	3	4	5	6	7
② abdominal discomfort.	1	2	3	4	5	6	7
③ a change in your usual number of bowel movement (either more or fewer), when the pain or discomfort started.	1	2	3	4	5	6	7
④ softer stools than usual, when the pain or discomfort started.	1	2	3	4	5	6	7
⑤ harder stools than usual, when the pain or discomfort started.	1	2	3	4	5	6	7
⑥ improvement of abdominal pain or abdominal discomfort after a bowel movement.	1	2	3	4	5	6	7
⑦ pasting mucus during a bowel movement.	1	2	3	4	5	6	7
⑧ feeling of incomplete emptying after a bowel movement.	1	2	3	4	5	6	7
⑨ feeling of abdominal distention.	1	2	3	4	5	6	7
⑩ straining anring bowel movement and/or difficulty to defecate.	1	2	3	4	5	6	7
⑪ urgency of defecation	1	2	3	4	5	6	7
⑫ anxiety about occurrence of bowel symptoms even when you have no bowel symptoms.	1	2	3	4	5	6	7
⑬ occurrence of bowel symptoms when you feel stress	1	2	3	4	5	6	7
⑭ occurrence of bowel symptoms after you take meals.	1	2	3	4	5	6	7

(2) In the last one week, what kind of stool form did you have generally?

1 separate lumpy stool
2 hard stool with aggregated lumpy stool
3 banana-like stool with cracks
4 smooth and soft stool
5 loose stool with blobs
6 mushy stool
7 watery stool

(3) In the last one week, what kind of bowel movement did you have generally?	1 no spontaneous bowel movement and used laxatives 2 no bowel movement 3 once or twice/week 4 3-4 times/week 5 5-6 times/week 6 2-3 times/day 7 over 4 times/day
(4) In the last one week, how often did you have abdominal pain or abdominal discomfort?	1 nothing 2 once/week 3 twice/week 4 3-4 times/week 5 5-6 times/week 6 once/day 7 twice/day
(5) In the last one week, how often did you visit an emergency room of the hospital because of bowel symptoms?	1 not at all 2 visited once/week 3 visited twice/week 4 visited 3-4 times/week 5 visited 5-6 times/week 6 visited once/day 7 visited over twice/day
(6) In the last one week, how often did you visit your usual outpatient clinic (except emergency room) because of bowel symptoms?	1 not at all 2 visited once/week 3 visited twice/week 4 visited 3-4 times/week 5 visited 5-6 times/week 6 visited once/day 7 visited over twice/day
(7) In the last week, how often did you feel stress?	1 not at all 2 felt once/week 3 felt twice/week 4 felt 3-4 times/week 5 felt 5-6 times/week 6 felt once/day 7 felt over twice/day
(8) In the last one week, how was your life disturbed because of bowel symptoms? (e.g. absent from job, unable to get in or on a vehicle, etc…)	1 not at all 2 no disturbance despite slight symptoms 3 no disturbance despite symptoms once 4 no disturbance with slight bearing symptoms 5 no disturbance with bearing symptoms 6 sometimes disturbed 7 disturbed

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