

This is a non-final version of an article published in final form in:  
Bengtsson M, Ulander K, Börgdal EB, Ohlsson B. A holistic approach for planning care of patients with irritable bowel syndrome. *Gastroenterol Nurs*. 2010 Mar-Apr;33(2):98-108.  
<http://dx.doi.org/10.1097/SGA.0b013e3181d60026> Access to the published version may require subscription. <http://journals.lww.com/gastroenterologynursing>

## **A Holistic Approach for Planning Care of Patients with Irritable Bowel Syndrome**

Mariette Bengtsson, PhD, MSc, RN  
Department of Nursing  
Faculty of Health and Society  
Malmö University  
Sweden  
[mariette.bengtsson@mah.se](mailto:mariette.bengtsson@mah.se)

Kerstin Ulander, PhD, MSc, RN

Elisabet Bergh Börgdal, MSc

Bodil Ohlsson, PhD, MD, RN

### Abstract

The aims of this study were to determine whether a registered nurse can collect information and plan a holistic and individual strategy for the treatment of patients with Irritable Bowel Syndrome (IBS), and whether this approach can reduce the patients' health aspects. The referrals of 50 female Swedish-speaking patients aged between 18-65 years with the preliminary diagnosis of IBS were collected and scrutinized by a gastroenterologist at a University Hospital. Of these, 41 patients agreed to participate but 2 did not show up. The 39 were randomized into one of two groups: (1) the intervention group where the subjects were interviewed based on the theory of Culture Care by a nurse before visiting a gastroenterologist (n = 19) and (2) the control group (n = 20) where the subjects first met a gastroenterologist. Nineteen of the subjects were found after the medical examination to have diseases other than IBS. The interview gave a holistic view of the subjects' problems which could be of use when planning further care. Because subjects sometimes did not receive an accurate diagnosis by their primary care physician, however, the clinic nurse could not give these subjects IBS-specific information since the subjects' diagnosis had not been established. The initial medical assessments based on the primary care doctors' care of many subjects with IBS symptoms were a noted weak point.

## **A Holistic Approach for Planning Care of Patients with Irritable Bowel Syndrome**

Irritable Bowel Syndrome (IBS) is a global disease with the overall prevalence of IBS in Europe estimated to be 10% (Hungin, Whorwell, Tack & Mearin, 2003). The prevalence has been reported as high as 22% by American researchers (Drossman, Whitehead, & Camilleri, 1997). The etiology is unknown, but heredity, psychosocial factors, nutrition, and inflammation/infection have been proposed (Drossman, 2006).

### **Background**

The diagnosis for IBS is based on the Rome criteria, with a third version introduced early in 2006 (Chang, 2006, Drossman, 2006). Abdominal pain and bloating are the dominant symptoms of IBS (and also the most troublesome) (Dapoigny et al., 2004), in combination with altered bowel habits such as constipation or diarrhea (Thompson, Longstreth, Drossman, Heaton, Irvine, & Müller-Lissner, 1999). Apart from physical health problems, IBS also has a negative influence on a person's mental health (Caudell, 1994; Folks & Kinney, 1992,) as well as daily life (Creed, Ratcliffe, Fernandez, Tomenson, Palmer, Rigby, et. al., 2001; Hahn, Yan, & Strassels, 1999), and thereby health-related quality of life.

Patients diagnosed with IBS must deal with this life-long disorder. Even though IBS is not a grave or life-threatening condition, the symptoms can be very severe and disabling (Bengtsson, Ohlsson, & Ulander, 2007b). Patients with mild gastrointestinal (GI) symptoms may respond to pharmaceutical drugs such as laxatives, fiber, and loperamid, but patients with severe refractory IBS are more difficult to treat (Olden & Brown, 2006).

When an individual decides to seek healthcare services, he has made a judgement about the importance of his symptoms and their interference with his life (Wilson & Cleary, 1995). Not all

persons with bowel symptoms characteristic of IBS seek healthcare (Hungin et al., 2003).

Among those who seek help, most are diagnosed and treated at primary healthcare centers, but patients are also referred to gastroenterology clinics (Hungin et al., 2003; Simrén, Abrahamsson, Svedlund, & Björnsson, 2001; Thompson, Heaton, Smyth, & Smyth, 2000).

The first visit to a physician, mostly in primary care, begins with a systematic interview of the patient by questions related to GI symptoms. It is important to obtain a detailed history to identify alarm symptoms to discover any organic disease. Alarm symptoms can, for example, include blood in the stools, weight loss, nocturnal symptoms, and a family history of cancer (Torii & Toda, 2004).

IBS cannot be diagnosed by physical examination, laboratory tests, endoscopic or radiologic investigations, although the patient has to undergo tests to exclude other diseases (Bellini, Tosetti, Costa, Biagi, Stasi, Del Punta, et al., 2005; Cash & Chey, 2004; Olden, 2002). IBS has traditionally been considered as a diagnosis of exclusion rather than a primary diagnosis, since there are no observable biochemical or structural abnormalities to be found (Cash & Chey, 2004). Registered nurses can be involved in the planning and implementation of therapeutic interventions for this patient population (Dill & Dill, 1995; Smith, 2006; Talley, 2000), and they can help patients with IBS by teaching them to help themselves (Bengtsson, Ulander, Bergh Börgdal, Christiansson & Ohlsson, 2006; Dill & Dill, 1995; Talley, 2000).

Many patients with IBS, however, seek medical care for many years at different healthcare levels and consume a significant amount of resources. We have in earlier studies shown how patients with IBS have perceived the management of their treatment to have been inadequate (Bengtsson & Ohlsson, 2005), and the routines for how patients are taken care of at a clinic ought to be arranged to benefit the patient. For the most part, healthcare professionals (e.g.,

doctors, nurses, dieticians and physiotherapists) work separately and give the patient individual consultations. Some of the patients are admitted to gastroenterology clinics. This prompts the question of whether an early contact at the gastroenterology clinic with a registered nurse who has experience and knowledge of IBS could be made part of the routine care for these individuals since the patients have already been examined by a physician in primary care.

The population of most countries are increasingly multicultural and patients are of different ethnicity and cultural background. Cultural, physiological, psychological, and social health factors influence how patients perceive illness (Leininger, 1991). Therefore, there is a need to discover ways to provide individually culturally collaborative care in order to regain the patients' health and well-being (Bengtsson & Ohlsson, 2005; Bengtsson et al., 2007b).

It is a challenge for nurses to provide holistic and meaningful care, but nursing theories can be of help to discover new perspectives care. Leininger's Theory of Culture Care (Leininger, 1991) may be one way for nurses working in a multicultural society to identify proper care for patients with IBS who have different lifestyles. This theory is designed to focus on describing, explaining, and predicting meaningful nursing care that is collaborative with the patient. The nurse and the patient together design a different lifestyle which enhances health and the well-being of the patient. Leininger (1991) highlights the meaning and importance of culture in explaining an individual's health and caring behaviour.

Framed within Leininger's (1991) Theory of Culture Care, the aims of this study were 1) to find out whether a registered nurse working at a gastroenterology clinic could collect information and plan (in collaboration with the patient) a holistic and individual strategy for the investigation and care of patients with IBS, and 2) whether this collaborative plan can reduce the patients' symptoms and increase their psychological well-being.

## Material and Methods

### Subjects

All patients' referrals to the Department of Gastroenterology at the University Hospital of Malmö between April 2003 and April 2005 were consecutively scrutinized by a physician specialist in gastroenterology. The referrals of 50 female Swedish-speaking patients aged between 18-65 years with the preliminary diagnosis of IBS were collected. These referrals were assessed as to whether all investigations performed were negative and if the symptoms were in accordance with the Rome II criteria for IBS (Thompson et al., 1999). All 50 identified referrals fulfilled these inclusion criteria and the patients were asked by mail and phone to participate in the study. Out of these, 41 women accepted to take part in the study and 9 declined participation. Men were not included since men and women with IBS have different clinical symptoms and differ in their view of their quality of life (Faresjö, Grodzinsky, Johansson, Wallander, Timpka, & Åkerlind, 2007; Lee, Mayer, Schmulson, Chang, & Naliboff 2001; Ouyang, & Wrzos, 2006).

### Design

The study was approved by the Ethics Committee at Lund University (LU 735-02). The subjects identified were informed of the study details in writing as well as by telephone, and they gave their written informed consent before entering the study. All patients who agreed to participate and came to the hospital were included in the study and randomized into one of two groups (intervention vs. control). Twenty cards marked with each of the two investigation regimes (intervention vs. control) were put into closed envelopes. The envelopes were shuffled and all subjects received an envelope in consecutive order to determine their group assignment after they agreed to take part in the study.

The subjects in the intervention group first met a nurse and were interviewed for the purpose of creating a collaborative care plan before they met a gastroenterologist. Independent of group, all the subjects received an ordinary medical assessment as well as a supplementary investigation and a visit to a dietician when necessary, before going back to their primary care center. At the time of inclusion, the subject completed the Gastrointestinal Symptom Rating Scale (GSRS) (Dimenäs, Glise, Hallerbäck, Hernqvist, Svedlund, & Wiklund, 1993; Dimenäs, Glise, Hallerbäck, Hernqvist, Svedlund, & Wiklund, 1995; Svedlund, Sjödin, & Dotevall, 1988), and the Psychological General Well-Being Index (PGWB) (Dupy, 1984; Wiklund & Karlberg, 1991) questionnaires. The participants also completed the questionnaires six months after all the examinations were finished. Before coming to the hospital, the subjects also wrote down their food intake for a week. Calories, vitamins, proteins, etc. were counted. All the self-rated questionnaires were sent to the participants by mail.

#### Interview

The nurse collected the information by interviewing the subjects in the study group individually, using a questionnaire based on Leininger's Sunrise Model (Leininger, 1991). This model is designated to depict a total view of the different dimensions that affect the care of the patient. The purpose of the questionnaire was to structure the interviews and thereby aid and help the nurse interviewing the subjects. The nurse asked questions about family, social, and life-style factors such as sleep, stress, exercise and smoking, eating-habits, medical history including examinations and treatments to date, religious and educational background, as well as economic factors with the focus on occupation. The intention was to get a full holistic view of the subject and at the end of the session, in collaboration with the subject, create a care plan, taking into

account the subjects' symptoms, life-style, and psychological well-being in relation to their worldview as well as cultural and social circumstances.

### Questionnaires

The Gastrointestinal Symptom Rating Scale (GSRS) is a Swedish questionnaire designed to evaluate GI symptoms, which can be used for patients with various GI diagnoses (Dimenäs et al., 1993; Dimenäs et al., 1995; Svedlund et al., 1988). The questionnaire includes 15 items valued on a 7-grade Likert scale. This gives a total range-value between 15 and 105, where the higher the scores, the more pronounced are the symptoms. The items are divided into five dimensions: Abdominal Pain Syndrome (3 items), Reflux Syndrome (2 items), Indigestion Syndrome (4 items), Diarrhea Syndrome (3 items), and Constipation Syndrome (3 items).

The PGWB is a generic instrument for measuring positive and negative aspects of subjective well-being and distress (Dupy, 1984), and a Swedish version has been presented by Wiklund and Karlberg (1991). Translation of the PGWB was completed by using backwards-forwards techniques. The questionnaire includes 22 items valued on a 6-grade Likert scale, with a total range-value between 22 and 132. The higher the score, the better is the patient's psychological well-being. The items are divided into six dimensions: Anxiety (5 items), Depressive Mood (3 items), Positive Well-being (4 items), Self-Control (3 items), General Health (3 items) and Vitality (4 items). The PGWB has been found to have a high degree of reliability and validity in both population-based and mental health samples (Naughton & Wiklund, 1993). The internal consistency reliability of the PGWB is acceptable with Cronbach's alpha correlations ranging from 0.61-0.89. The Cronbach's alpha for the entire PGWB scale was > 0.90.

The Psychological General Well-Being Index (PGWB) as well as the GSRS have been tested on a Swedish population, and norm values have been described by Dimenäs and associates (1996). In a study of 1600 patients experiencing GI complaints, Dimenäs and associates (1993) found that they had lower levels of well-being than those patients who were not experiencing such symptoms. Concurrent validity of the GSRS and the PGWB were completed by correlating the instruments with several other instruments (Bengtsson, Ohlsson, & Ulander, 2007a; Wiklund & Karlberg, 1991).

#### Statistical analyses

For the power calculation, the program Repeated Measures ANOVA Power Analysis was used. In the calculation, a 10% reduction in the subjects' GI symptoms according to the GSRS and a 5% improvement in the subjects' well-being according to the PGWB was estimated. Since the subjects' psychological well-being is affected by things other than the physiological symptoms, the limit for improvement was set lower for the PGWB than the GSRS. The values used for the power calculation were based on estimations performed in an earlier study (Bengtsson & Ohlsson, 2005). According to an F-test calculated for each instrument, there was a need for nine subjects to reach a 97% power level.

The results are mainly presented descriptively. Values for age were expressed as mean and standard deviation (SD) and for other values median and interquartile range (IQR). The Wilcoxon Signed Rank test was used for the calculation of the GSRS and PGWB over time, and the Mann-Whitney U-test for comparing two independent groups. An alpha of  $P < 0.05$  was considered statistically significant.

## Results

Of the 41 women who accepted to take part in the study, two did not show up at the clinic. An overview of the subjects' progression through the study can be seen in Figure 1. The 39 subjects included were randomized into the intervention group (n = 19) and control group (n = 20). The gastroenterologists' physical examinations established that only 20 of these 39 subjects had a diagnosis of IBS. Only the results from these 20 subjects diagnosed as having IBS are presented in the results. The 20 subjects had a mean age of  $34 \pm 13$  years of age, range 19-59 years. The characteristics of the subjects with IBS in the two groups can be seen in Table 1. There was no statistically significant difference concerning use of healthcare resources prior to the study between the subjects in the two groups.

Of the 19 subjects (49%) who were found not to have IBS, some had fat or bile salts malabsorption (n = 4), lactose intolerance (n = 3), eating disturbances or drug abuse (n = 4), esophageal cardiac sphincter insufficiency with reflux (n = 1), celiac disease (n = 1), hemorrhoids (n=1), collagen colitis (n = 1), Crohn disease (n = 1), multiple severe diseases such as heart and renal failure (n = 1), and two subjects became spontaneously healthy.

### Procedures

#### *Intervention group*

The subjects who were randomized to the intervention group first met a registered nurse with experiences and knowledge of IBS. By using the modified version of Leininger's Sunrise Model (Leininger, 1991), the nurse gathered information from the subject and took blood samples for laboratory analyses ordered by the gastroenterologist who had scrutinized the admission. The nurse found the questionnaire easy to use, but questioning the subjects about economic and educational factors was perceived as demanding by the nurse.

It was obvious that all subjects who were referred to the hospital wanted, as well as expected, to first meet a gastroenterologist for a thorough medical examination and confirm their illness. The subjects were dissatisfied with their earlier contact with the primary care center and said that they did not receive respect from healthcare professionals. The subjects perceived that the staff had not believed them and their problems were ignored. When all the information from the subjects was collected, the conclusion was that all the subjects wanted was to be relieved of their illness and have a normal life.

The nurse discovered that most of the subjects had not been completely examined by their primary care physician, and the diagnosis of IBS was not entirely established; therefore, the nurse could not recommend anything other than supplementary investigation even though visits to a dietician or psychologist could have been of benefit to most of the subjects. In one case, however, the nurse discovered that the subject had celiac disease after blood samples had been taken and analyzed, and the subject therefore received appropriate instructions on diet from the dietician before the medical examination.

All but two of the subjects told a similar story. They had felt miserable as children and they thought they were not good enough even as an adult. The subjects have high demands on themselves, and difficulties with setting limits for other people who require much from them. Some of them had taken responsibility for their family-members and even today, they still had this kind of responsibility. Seven of the subjects still live a stressful life at present and only two of them exercised regularly several times per week. Six of the subjects were smokers.

The analysis of the subjects' eating-habits showed that almost all had an unhealthy diet. Even if they ate fruit daily, all of them ate sweets at least once a day. According to the Nordic Nutrition Recommendations (Becker, Lyhne, Pedersen, Aro, Fogelholm, Alexander, et. al.,

2004), all subjects had too low an intake of vitamins, and 6 of the 9 subjects had too low of an intake of dietary fiber, iron, and calcium.

The nurse could not give IBS-specific information since the subjects' diagnosis had not been established; therefore the nurse provided general information about physical activity and stress management, and how these subjects affect and interact with health (Bengtsson et al., 2006). The nurse also gave basic information on nutrition and general advice on how often and what to eat. After being examined by a gastroenterologist, the subjects who had poor food habits were instructed to complete a diet registration questionnaire before their visit to a dietician.

At the visit to the gastroenterologist, a thorough medical assessment was made. In this group, six subjects met with the gastroenterologist once, and three subjects met with the gastroenterologist twice. Three subjects also talked to the gastroenterologist by phone as a follow-up (Table 2). The subjects in this group made fewer visits as well as more phone calls to the gastroenterologist compared to the subjects in the control group.

#### *Control group*

In the control group, 5 of the 11 subjects met the gastroenterologist once, three subjects twice, and three subjects met the gastroenterologist three times. Seven subjects also talked to the gastroenterologist by phone (Table 2). Only two subjects in this group were not further investigated before being referred back to the primary healthcare center.

#### Assessment of Gastrointestinal Symptoms and Psychological Wellbeing

The scores of the GSRS and the PGWB assessed before inclusion in the study by the subjects who had IBS ( $n = 20$ ) are shown in Tables 3 and 4. Although a small improvement of the scores for the subjects in the study group ( $n = 9$ ) before starting the investigation (GSRS median score = 51, IQR = 39-60, and PGWB median score = 88, IQR 63-95), compared to six

months after last contact with the hospital (GSRS median score = 49, IQR 42-62, and PGWB median score = 90, IQR 75-107), there was no statistically significant difference. There were no statistically significant differences between the two groups in the present study or compared to the subjects who had GI diseases but not IBS.

### Discussion

Leininger's (1991) Sunrise Model used in the present study was of help to collect information from the subjects, who showed signs of frustration and anger at being misunderstood. Each subject and the nurse did reach a collaborative agreement; however, none of the subjects were completely investigated even though they had visited a physician in primary care and a specialist had scrutinized the admissions. If this model should be used, a thorough medical examination as well as x-ray examinations has to be performed first of all to exclude other diagnoses. It is important when the IBS diagnosis is established that there are no observable biochemical or structural abnormalities to be found (Cash & Chey 2004) before a nurse, in collaboration with the patient, can plan a further strategy for care.

A gastroenterologist might preferably be the first to meet the patient in a gastroenterology department to confirm a diagnosis and validate the patient's perception of their condition (Alaradi & Barkin, 2002; Shen & Soffer, 2001); however, one reason to let the patient meet a nurse first is that the admission process can be completed based on the assessment from earlier primary care examinations. Another reason is that if alarm symptoms are present, the time before meeting the gastroenterologist could be decreased by using the nurse for screening. Moreover, a nurse can have an important role in supporting and informing the patient and can coordinate further care when the diagnosis is established (Dill & Dill, 1995; Hogston 1993; Smith, 2006). By interviewing the patient with a focus on physiological, psychological and social health

aspects, risk factors which aggravate the symptoms should be identified and excluded. In this study, the nurse worked with the subject in a co-participant manner to develop a re-patterning or restructuring of nursing care, and together they designed a different lifestyle for the health and well-being of the patient (e.g., care related to eating, smoking, mental health, and physical activity).

Patients primarily seek help for their symptoms at a primary healthcare center, and the physician there should diagnose patients with IBS correctly before a referral is sent to a gastroenterology clinic. An organic disease should first be excluded (Cash & Chey, 2004; Torii & Toda, 2004) by the examination at the primary care clinic. The routines followed by physicians differ, however, depending on practice speciality as well as the availability of specialized tests (Lacy, Rosemore, Robertson, Corbin, Grau, & Crowell, 2006). Tests to exclude, for example, lactose intolerance, fat and bile salts malabsorption, as well as celiac disease are easy to perform.

Steps have been taken to better understand the pathophysiology in IBS, but much is still unknown. According to several authors, there is a lack of knowledge among physicians as well as nurses on how to treat patients with IBS (Bellini et al., 2005; Heitkemper, Olden, Gordon, Carter, & Chang, 2001; Heitkemper, Carter, Ameen, Olden, & Cheng, 2002; Letson & Dancey, 1996, Longstreth & Burchette, 2003; Richmond & Devlin, 2003). More instruction for physicians and nurses in primary care about IBS and other gastroenterology diseases may improve their ability to treat patients with GI symptoms and to diagnose IBS (Lacy et al., 2006). A nurse with specialized knowledge of IBS working at a primary care center may be a benefit for patients with this disorder. The nurse could coordinate the investigation, offer information and

support, and help the patient to learn to live with the illness (Dill & Dill, 1995; Hogston 1993; Smith 2006).

In the present study, the subjects suffering from IBS told the nurse in the interview that they felt misunderstood and not taken seriously by their earlier healthcare contact. The attitudes towards patients with GI symptoms differ from person to person, but this ignorance and lack of respect has also been reported in studies in the United Kingdom (Dancey & Backhouse, 1993), Canada (Meadows, Lackner, & Belic, 1997), and Ireland (O'Sullivan, Mahmud, Kelleher, Lovett, & O'Morain, 2000) as well as Sweden (Bengtsson et al., 2007b). By tradition, physicians have used their own knowledge and judgement to make decisions on behalf of their patients, but this trend is changing (Le Var 2002). In general, patients of today also want information about their illness and wish to be more involved in their treatment (Coulter, 1997).

Patients and doctors have sometimes different perceptions of the goal of the treatment and the need of investigations, and therefore the patients' expectations need to be explored (Bijkerk, de Wit, Stalman, Knottnerus, Hoes, & Muris, 2003). The physicians as well as nurses have to establish a good relationship with the patient and show interest and concern, which requires an interaction with the patient. If the healthcare professionals do not establish a good relationship with the patient, there is a risk that the patient will seek help elsewhere and may use inappropriate therapies. It is important that there is collaboration between the patient and caregiver. According to Owens and associates (1995), a good relationship between the caregiver and patient could reduce the number of return visits.

Patients with GI symptoms constitute a heterogeneous group of patients with differences in duration, severity, and type of symptoms, and all healthcare professionals have to deal with each patient's specific worries, fears, and concerns about IBS (Olden & Brown, 2006). Some of the

patients suffering from IBS had bad food habits and an unhealthy life-style. When the diagnosis is established, perhaps all patients with IBS should be offered systematic, structured, empowering group instruction with a focus on their physical and mental health. The goal of empowering education is to reach a collaborative care plan which aims at encouraging the patient to become an active partner and, together with health professionals, take control of the disorder (Rankin & Stallings, 2001).

Instruction to patients with IBS about health promoting modifications of lifestyle, including physical activity, diet, and stress management has been given in the United States and Sweden with some improvements in the participants' health (Bengtsson et al., 2006; Colwell, Prather, Phillips, & Zinsmeister, 1998; Saito, Prather, Van Dyke, Fett, Zinsmeister, & Locke, 2004). The patient should be instructed about the underlying pathophysiology and informed about different forms of treatment, diet, and a healthy lifestyle as well as physical activity and stress management. If the patient knows the factors that influence the symptoms and what to anticipate, he is better prepared to face the inconveniences the symptoms create, and thereby the symptoms and well-being in these patients can be improved (Bengtsson et al., 2006; Saito et al., 2004). In the present study, this improvement was not seen, which may be due to the short follow-up time, or that the information given was not specific for patients with IBS. Also, the patients had had their symptoms for several years.

#### Limitations

The study has certain limitations. One limitation is the small number of patients participating. This is similar to other studies (Bengtsson & Ohlsson, 2004; Ohlsson, Truedsson, Bengtsson, Torstensson, Sjölund, Björnsson, & Simrén, 2006; Halpert, Thomas, Hu, Morris, Bangdiwala, & Drossman, 2006). It seems strange that patients who are distressed in their search

for help for their troublesome symptoms are not interested in participating in a study concerning their own specific problems. One may speculate that the patients with IBS want a simple solution to their problem, such as an efficient drug. They are not able, or do not have time, to put a lot of work into their problems and are not interested in answering research questionnaires (Halpert et al., 2006). Another limitation is that many gastroenterologists at the gastroenterology department were involved in the study and have different routines for how to contact and inform their patients of the results of the x-rays and other tests the patients have undergone. Therefore, no conclusions based on the number of visits or phone calls to the gastroenterologist can be drawn, even though there are differences between the groups investigated.

The new Rome III criteria were published after this study had started, but the new criteria may not have affected the study or the results since all 50 identified referrals of female Swedish-speaking patients aged between 18-65 years with the preliminary diagnosis of IBS were asked to take part in the study. No referrals were excluded after the gastroenterologist had scrutinized the referrals according to the Rome II criteria.

### Conclusions

This study showed that a questionnaire based on Leininger's (1991) Sunrise Model could be of help when collecting information from a IBS-diagnosed patient and for planning further collaborative care based on each patient's individual needs. A nurse cannot, however, initially replace the gastroenterologist at a gastroenterology department and plan a strategy for the investigation until the diagnosis of IBS has been established. Nineteen (49%) of the 39 patients included in the present study received a diagnosis other than IBS after examination by the gastroenterologist, or they recovered spontaneously, even though IBS had been suggested by the physician in primary care and was suspected by the specialist. Accurate diagnosis by the primary

care physician is critical to further expedite the care of IBS patients in the gastroenterology clinic setting.

.

## References

- Alaradi, O., & Barkin, J. (2002). Irritable bowel syndrome: Update on pathogenesis and management. *Medical Principles and Practice, 11*, 2-17.
- Becker, W., Lyhne, N., Pedersen, A. N., Aro, A., Fogelholm, M., Alexander, J., . . . Pedersen, J. I. (2004). *Nordic nutrition recommendations 2004: Integrating nutrition and physical activity* (p. 13). Copenhagen: Nordic Council of Ministers.
- Bellini, M., Tosetti, C., Costa, F., Biagi, S., Stasi, C., Del Punta, A., . . . Marchi, S. (2005). The general practitioner's approach to irritable bowel syndrome: From intention to practice. *Digestive and Liver Disease, 37*, 934-939.
- Bengtsson, M., & Ohlsson, B. (2004). Retrospective study of long-term treatment with sodium picosulphate. *European Journal of Gastroenterology & Hepatology, 16*, 433-434.
- Bengtsson, M., & Ohlsson, B. (2005). Quality of life during long-term treatment with sodium picosulphate. *Gastroenterology Nursing, 28*, 3-12.
- Bengtsson, M., Ulander, K., Bergh Börgdal, E., Christiansson, A. C., & Ohlsson, B. (2006). Education programme for women with irritable bowel syndrome. *Patient Education and Counseling, 62*, 118-125.
- Bengtsson, M., Ohlsson, B., & Ulander, K. (2007a). Development and psychometric testing of the Visual Analogue Scale for Irritable Bowel Syndrome (VAS-IBS). *BMC Gastroenterology, 7*, 16.
- Bengtsson, M., Ohlsson, B., & Ulander, K. (2007b). Women with Irritable Bowel Syndrome and their perception of a good quality of life. *Gastroenterology Nursing, 30*, 74-82.

- Bijkerk, C. J., de Wit, N. J., Stalman, W. A., Knottnerus, J. A., Hoes, A. W., & Muris, J. W. (2003). Irritable bowel syndrome in primary care: the patients' and doctors' views on symptoms, etiology and management. *Canadian Journal of Gastroenterology, 17*, 363-368.
- Cash, B. D., & Chey, W. D. (2004). Irritable bowel syndrome: An evidence based approach to diagnosis. *Alimentary Pharmacology & Therapeutics, 19*, 1235-1245.
- Caudell, A. (1994). Psychophysiological factors associated with irritable bowel syndrome. *Gastroenterology Nursing, 17*, 61-67.
- Chang, L. (2006). From Rome to Los Angeles -- The Rome III Criteria for the Functional GI Disorders. Retrieved online January 24, 2010 @ <http://www.romecriteria.org/pdfs/RomeC.ritieraLaunch.pdf>
- Colwell, L. J., Prather, C. M., Phillips, S. F., & Zinsmeister, A. R. (1998). Effects of an irritable bowel syndrome educational class on health-promoting behaviours and symptoms. *American Journal of Gastroenterology, 93*, 901-905.
- Coulter, A. (1997). Partnerships with patients: The pros and cons of shared clinical decision making. *Journal Health Service Research Policy, 2*, 112-121.
- Creed, F., Ratcliffe, J., Fernandez, L., Tomenson, B., Palmer, S., Rigby, C., . . . Thompson, D. (2001). Health-related quality of life and health care cost in severe refractory irritable bowel syndrome. *Annals of Internal Medicine, 134*, 860-868.
- Dancey, C. P., & Backhouse, S. (1993). Towards a better understanding of patients with irritable bowel syndrome. *Journal of Advanced Nursing, 18*, 1443-1450.

- Dapoigny, M., Bellanger, J., Bonaz, B., Bruley des Varannes, S., Bueno, L., Coffin, B., . . . Reigneau, O. (2004). Irritable bowel syndrome in France: A common, debilitating and costly disorder. *European Journal of Gastroenterology & Hepatology*, *16*, 995-1001.
- Dill, B., & Dill, J. E. (1995). The RN's role in the office treatment of irritable bowel syndrome. *Gastroenterology Nursing*, *18*, 100-103.
- Dimenäs, E., Glise, H., Hallerbäck, B., Hernqvist, H., Svedlund, J., & Wiklund, I. (1993). Quality of life in patients with upper gastrointestinal symptoms. An improved evaluation of treatment regimens? *Scandinavian Journal of Gastroenterology*, *28*, 681-687.
- Dimenäs, E., Glise, H., Hallerbäck, B., Hernqvist, H., Svedlund, J., & Wiklund, I. (1995). Well-being and gastrointestinal symptoms among patients referred to endoscopy owing to suspected duodenal ulcer. *Scandinavian Journal of Gastroenterology*, *30*, 1046-1052.
- Dimenäs, E., Carlsson, G., Glise, H., Israelsson, B., & Wiklund, I. (1996). Relevance of norm values as part of the documentation of quality of life instruments for use in upper gastrointestinal disease. *Scandinavian Journal of Gastroenterology Supplement*, *221*, 8-13.
- Drossman, D. A. (2006). The functional gastrointestinal disorders and the Rome III process. *Gastroenterology*, *130*, 1377-1390.
- Drossman, D. A., Whitehead, W. E., & Camilleri, M. (1997). Irritable bowel syndrome: A technical review for practice guideline development. *Gastroenterology*, *112*, 2120-2137.
- Dupy, H. J. (1984). The psychological general well-being (PGWB) index. In N. K. Wenger, M.E. Mattsson, C.F. Furberg, & J. Elinson (Eds.) *Assessment of quality of life in clinical trials of cardiovascular therapies*. New York: Le Jacq Publishing Inc.

- Faresjö, Å., Grodzinsky, E., Johansson, S., Wallander, A-M., Timpka, T., & Åkerlind, I. (2007). A population-based case-control study of work and psychosocial problems in patients with irritable bowel syndrome-women are more seriously affected than men. *American Journal of Gastroenterology*, *102*, 371-379.
- Folks, D. G., & Kinney, F. C. (1992). The role of psychological factors in gastrointestinal conditions. A review pertinent to DSM-IV. *Psychosomatics*, *33*, 257-270.
- Hahn, B. A., Yan, S., & Strassels, S. (1999). Impact of irritable bowel syndrome on quality of life and resource use in the United States and United Kingdom. *Digestion*, *60*, 77-781.
- Halpert, A. D., Thomas, A. C., Hu, Y., Morris, C. B., Bangdiwala, S. I., & Drossman, D. A. (2006). A survey on patient educational needs in irritable bowel syndrome and attitudes toward participation in clinical research. *Journal of Clinical Gastroenterology*, *40*, 7-43.
- Heitkemper, M., Olden, K., Gordon, S., Carter, E., & Chang, L. (2001). Irritable bowel syndrome: A survey of nurses' knowledge. *Gastroenterology Nursing*, *24*, 281-287.
- Heitkemper, M., Carter, E., Ameen, V., Olden, K., & Cheng, L. (2002). Women with irritable bowel syndrome: differences in patients' and physicians' perceptions. *Gastroenterology Nursing*, *25*, 192-200.
- Hogston, R. (1993). Nursing management of irritable bowel syndrome. *British Journal of Nursing*, *2*, 215-217.
- Hungin, A. P., Whorwell, P. J., Tack, J., & Mearin, F. (2003). The prevalence, patterns and impact of irritable bowel syndrome: an international survey of 40,000 subjects. *Alimentary pharmacology & therapeutics*, *17*, 643-650.

- Lacy, BE., Rosemore, J., Robertson, D., Corbin, DA., Grau, M., & Crowell, MD. (2006). Physicians' attitudes and practices in the evaluation and treatment of irritable bowel syndrome. *Scandinavian Journal of Gastroenterology*, 41, 892-902.
- Lee, O. Y., Mayer, E. A., Schmulson, M., Chang, L., & Naliboff, B. (2001). Gender-related differences in IBS symptoms. *American Journal of Gastroenterology*, 96, 2184-2193.
- Leininger, M. (1991). *Culture care diversity & universality: A theory of nursing*. New York: National League for Nursing Press.
- Letson, S., & Dancey, C. P. (1996). Nurses' perceptions of irritable bowel syndrome (IBS) and sufferers of IBS. *Journal of Advanced Nursing*, 23, 969-974.
- Le Var, R. M. (2002). Patient involvement in education for enhanced quality of care. *International Nursing Review*, 49, 219-225.
- Longstreth, G. F., & Burchette, R. J. (2003). Family practitioners' attitudes and knowledge about irritable bowel syndrome: effect of a trial of physician education. *Family Practice*, 20, 670-674.
- Meadows, L. M., Lackner, S., & Belic, M. (1997). Irritable bowel syndrome. An exploration of the patient perspective. *Clinical Nursing Research*, 6, 156-170.
- Naughton, M. J., & Wiklund, I. (1993). A critical review of dimension-specific measures of health-related quality of life in cross-cultural research. *Quality of Life Research*, 2, 397-432.
- Ohlsson, B., Truedsson, M., Bengtsson, M., Torstensson, R., Sjölund, K., Björnsson, E. S., & Simrén, M. (2005). Effects of long-term treatment with oxytocin: A double-blinded placebo-controlled pilot trial. *Neurogastroenterology and motility*, 17, 697-704.

- Olden, K. W. (2002). Diagnosis of irritable bowel syndrome. *Gastroenterology*, *122*, 1701-1714.
- Olden, K. W., & Brown, A. R. (2006). Treatment of the severe refractory irritable bowel patient. *Current Treatment Options in Gastroenterology*, *9*, 324-330.
- O'Sullivan, M. A., Mahmud, N., Kelleher, D. P., Lovett, E., & O'Morain, C. A. (2000). Patient knowledge and educational needs in irritable bowel syndrome. *European Journal of Gastroenterology & Hepatology*, *12*, 39-43.
- Ouyang, A., & Wrzos, H. F. (2006). Contribution of gender to pathophysiology and clinical presentation of IBS: should management be different in women? *American Journal of Gastroenterology*, *101*, S602-S609.
- Owens, D. M., Nelson, D. K., & Talley, N. J. (1995). The irritable bowel syndrome: Long-term prognosis and the physician-patient interaction. *Annals of Internal Medicine*, *122*, 107-112.
- Rankin, S. H., & Stallings, K. D. (2001). *Patient education principles & practice* (4<sup>th</sup> ed). Philadelphia: Lippincott.
- Richmond, J. P., & Devlin, R. (2003). Nurses' knowledge of prevention and management of constipation. *British Journal of Nursing*, *12*, 600-610.
- Saito, Y. A., Prather, C. M., Van Dyke, C. T., Fett, S., Zinsmeister, A. R., & Locke, G. R. 3<sup>rd</sup>. (2004). Effects of multidisciplinary education on outcomes in patients with irritable bowel syndrome. *Clinical Gastroenterology and Hepatology*, *2*, 576-584.
- Shen, B., & Soffer, E. (2001). The challenge of irritable bowel syndrome: Creating an alliance between patient and physician. *Cleveland Clinic Journal of Medicine*, *68*, 224-225, 229-233, 236-237.

- Simrén, M., Abrahamsson, H., Svedlund, J., & Björnsson, E. S. (2001). Quality of life in patients with irritable bowel syndrome seen in referral centers versus primary care: The impact of gender and predominant bowel pattern. *Scandinavian Journal of Gastroenterology*, *36*, 545-552.
- Smith, G. D. (2006). Irritable bowel syndrome: Quality of life and nursing interventions. *British Journal of Nursing*, *15*, 1152-1156.
- Svedlund, J., Sjödin, I., & Dotevall, G. (1988). GSRS : A clinical rating scale for gastrointestinal symptoms in patients with irritable bowel syndrome and peptic ulcer disease. *Digestive and Liver Disease*, *33*, 129-134.
- Talley, N. J. (2000). Irritable bowel syndrome. Practical management. *Australian Family Physician*, *29*, 823-828.
- Thompson, W. G., Longstreth, G. F., Drossman, D. A., Heaton, K. W., Irvine, E. J., & Müller-Lissner, S. A. (1999). Functional bowel disorders and functional abdominal pain. *Gut*, *45*, II43-II47.
- Thompson, W. G., Heaton, K. W., Smyth, G. T., & Smyth, C. (2000). Irritable bowel syndrome in general practice: Prevalence, characteristics, and referral. *Gut*, *46*, 78-82.
- Torii, A., & Toda, G. (2004). Management of irritable bowel syndrome. *Internal Medicine*, *43*, 353-359.
- Wiklund, I., & Karlberg, J. (1991). Evaluation of quality of life in clinical trials. Selecting quality-of-life measures. *Controlled Clinical Trials*, *12*, 204S-216S.

Wilson, I. B., & Cleary, P. D. (1995). Linking clinical variables with health-related quality of life. A conceptual model of patient outcomes. *Journal of the American Medical Association*, 273, 59-65.

Table 1. Characteristics of the Subjects Diagnosed with Irritable Bowel Syndrome (IBS) (n = 20)

	Control group	Intervention group
Number of patients with IBS	11	9
Mean age (SD)	33 (12)	35 (15)
Smokers	4	6
Gastrointestinal symptoms		
Diarrhea	2	2
Constipation	1	1
Pain	1	3
Mixed IBS (diarrhea/constipation/pain)	6	3
Urgency to defecation	1	0
Sick-leave 12 months before inclusion (related to IBS)		
No reported sick-leave	5	5
<1 week	0	2
<1 month	4	2
≥1 month	2	0
Number of medications taken (related to IBS), kinds of drugs		
No drugs	8	3
1	2	4
2	1	1
3	0	1

SD = standard deviation

Table 2. Number of Contacts with the Healthcare Team for the 20 Subjects with Irritable Bowel Syndrome

	Number of patients	
	Control group (n = 11)	Intervention group (n = 9)
<i>Visit to the</i>		
Nurse	0	9
<i>Gastroenterologist, number of times</i>		
1	5	6
2	3	3
3	3	0
Dietician*	3	8
Psychologist*	2	4
Physiotherapist	2	0
<i>Number of telephone calls from gastroenterologist to the patient</i>		
0	4	6
1	3	2
2	1	1
3	1	0
4	1	0
5	0	0
6	1	0

\* Visit occurred while in this study or as a prior contact

Table 3. Subjects' Evaluation of their Gastrointestinal Symptoms Estimated with the Gastrointestinal Symptom Rating Scale (GSRS)

	Subjects with IBS (n = 20)		Control group (n = 11)		Study group (n = 9)		Mann-Whitney U
	Median	Interquartile	Median	Interquartile	Median	Interquartile	<i>p</i> value
GSRS Total Score ( <i>range 15-105</i> )	51	40-60	51	41-60	51	39-60	0.710
Reflux ( <i>range 2-14</i> )	2	2-8	2	2-8	3	2-7	0.552
Abdominal pain ( <i>range 3-21</i> )	8	5-12	7	6-14	9	4-11	0.503
Constipation ( <i>range 3-21</i> )	12	8-15	12	9-16	11	4-14	0.370
Indigestion ( <i>range 4-28</i> )	16	14-20	15	14-20	17	13-22	0.656
Diarrhea ( <i>range 3-21</i> )	10	7-15	10	8-14	11	5-16	0.941

Table 4. Subjects' (n = 20) Evaluation of their Psychological Well-being Estimated with the Psychological General Well-Being Index (PGWB)

	Subjects with IBS (n = 20)		Control group (n = 11)		Study group (n = 9)		Mann-Whitney U
	Median	Interquartile	Median	Interquartile	Median	Interquartile	<i>p</i> value
PGWB Total Score ( <i>range 22-132</i> )	78	66-94	73	67-88	88	63-95	0.766
Anxiety ( <i>range 5-30</i> )	18	16-23	18	16-25	18	15-22	0.766
Depressive mood ( <i>range 3-18</i> )	13	11-15	12	11-15	14	10-15	0.656
Positive Well-being ( <i>range 4-24</i> )	12	10-16	12	10-14	14	10-16	0.503
Self-control ( <i>range 3-18</i> )	12	9-16	11	9-16	14	9-15	0.503
General health ( <i>range 3-18</i> )	10	9-13	9	9-11	11	9-14	0.230
Vitality ( <i>range 4-24</i> )	12	9-14	12	9-14	12	9-14	0.882

Figure 1. Flow-chart of the 50 Swedish Speaking Patients (18-65 Years of Age) with Preliminary Diagnosis of Irritable Bowel Syndrome (IBS) Who Fulfilled the Study Inclusion Criteria

