The Effects of Lifestyle Modification on Symptoms and Quality of Life in Patients with Irritable Bowel Syndrome: A Prospective Observational Study

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Background/Aims: Although notably common, irritable bowel syndrome (IBS) has no specific cure. Lifestyle modification may be as important as medication; however, few studies support the effectiveness of such modifications. We performed this observational study of IBS patients to explore further the role of lifestyle changes in treatment. Methods: This study included 831 men who enlisted in 2010 as armed surgeon cadets and 85 women who concurrently entered the Armed Forces Nursing Academy. Of these 916 participants, 89 were diagnosed with IBS using the Rome III criteria. Subsequent bowel habits, quality of life, pain, stress, stool frequency and stool consistency were surveyed before and after 9 weeks of army training. We evaluated the lifestyle risk factors that impacted improvement in IBS symptoms by comparing those who responded to lifestyle modification (the responding group) to those who did not respond (the nonresponding group). Results: More than half of the participants (63%) reported that their symptoms improved after training. The quality of life and levels of pain and stress significantly improved after military training. Initial stress levels before military training and smoking history affected IBS symptom improvement. Conclusions: Lifestyle modification may be effective in managing IBS patients. (Gut Liver 2011;5:472-477)

Key Words: Irritable bowel syndrome; Life style; Smoking; Stress

INTRODUCTION

Irritable bowel syndrome (IBS) is a condition characterized by abdominal pain, bloating, and/or other discomforts associated with disturbed bowel patterns in the absence of organic causes detectable by routine medical tests. IBS is a very common disorder with a prevalence that ranges from 2.5% to 37% in many studies. A Korean study reported the prevalence of IBS as 6.6%. IBS accounts for 28% of the gastroenterology case load, and 12% of that is in primary care clinics. Although common, IBS is poorly understood. In particular, multiple factors interact, such as genetic background, gut infections, brain-gut interactions, and psychological disturbance. The multifactorial character and the absence of a cure for IBS compel patients and providers to work together over time to manage this condition. As in most chronic conditions that are not medically curable, self-management is crucially important in IBS. Interestingly, many physicians emphasize the importance of lifestyle modification in IBS, but have few resources to consult on the actual effectiveness of their recommendations. Relevant lifestyle modifications include sharp reductions in drinking and smoking, and maintenance of regular habits concerning sleep, meals, and exercise.

A community-based lifestyle modification study is likely to encounter poor compliance. In the Republic of Korea, all young men must perform obligatory military service. During military training, alcohol and smoking are curtailed, regular meals and physical training provided, and regular hours enforced. Hence military training imposes lifestyle modification in a controlled setting. We hypothesized that in this stable situation, the quality of life (QoL) and control of IBS symptoms would improve. Thus, we studied the impact of life style modification during military training in IBS patients and assessed which factors were associated with IBS symptom improvement. To our knowledge, this
is the first prospective study of lifestyle modification in Korean patients with IBS.

MATERIALS AND METHODS

1. Participants

Screening for IBS was conducted among 831 armed surgeon cadets who were enlisted in 2010 and 85 women who concurrently entered the Armed Forces Nursing Academy. All armed surgeon cadets were males and had worked in civilian hospitals before joining the army. All trainees entering the Armed Forces Nursing Academy were females. Before gathering information, researchers obtained informed consent from all participants. No one was pressured or coerced to participate and no commercial incentive was given. IBS was diagnosed using Rome III criteria. A primary survey was conducted of the participants who were diagnosed with IBS to determine QoL, degree of abdominal pain and stress, and socioeconomic factors including age, cause of stress, smoking, alcohol intake, and marital status. In the survey, smoking meant current smoker, and alcohol meant a habit of drinking alcohol; quantity of smoking and alcohol consumption were not assessed. No participant had a history of any disease that could interfere with military training.

2. Lifestyle modification

During military training, drinking alcohol and smoking were forbidden. Regular meals were supplied and physical activities including jogging and muscle training were performed as scheduled. Military training also included shooting and marching. All participants kept regular hours. Observation was conducted during the training course with no intervention of any kind.

3. Assessment and analysis

We evaluated subjective improvement of bowel habit, QoL, degree of pain, stool frequency, stool consistency, and stress level in IBS patients before and after military training. The primary survey asked about the past 3 months. After 9 weeks of observation, a follow-up survey asked about the most recent week. For subjective bowel habit change, the participants chose one of three following answers: improvement, no change, and aggravation. To assess QoL, participants completed an IBS-specific, 34-item questionnaire developed by Patrick using a self-rating scale for each health-related item. When scored, all items are reversed so that as the IBS-QOL score increases, QoL increases. All final raw scores are transformed into a 0 (poor QoL) to 100 (maximum QoL). The questionnaire was translated from English to Korean by the authors. Participants were asked to rate their subjective abdominal pain or discomfort and stress level on a visual analogue scale (score range, 0 to 100). Stool frequency by IBS subtype and Bristol Stool Form Scale were evaluated before and after military training. Comparisons before and after military training were performed to evaluate differences in QoL, abdominal pain, stress, stool frequency and stool consistency. The participants were divided into 2 groups based on the subjective bowel habit change, a responding group who chose “improvement” after training and a nonresponding group who chose “no change” or “aggravation.” Group analysis was conducted to evaluate differences in age, body weight, smoking, sex, alcohol consumption, marital status, and degree of stress, and through this analysis, identify modifiable risk factors for IBS.

4. Statistics

Comparisons before and after military training were made using paired t-tests. Participants were divided into 2 groups: normal stool group (Bristol type 3, 4, and 5) and abnormal stool group (Bristol type 1, 2, 6, and 7). Difference in stool consistency was analyzed with the McNemar test. Kruskal–Wallis test was used to evaluate stool frequency according to IBS subtype. Group analysis was performed using independent t-tests, Pearson’s chi-square test, and Fisher’s exact test. We performed multivariate logistic regression to evaluate lifestyle risk factors for IBS while adjusting for other covariates. The model included all the risk factors surveyed in this study. A p-value of less than 0.05 was considered statistically significant. All statistical evaluations were performed with SPSS for Windows version 13.0 (SPSS Inc., Chicago, IL, USA).

![Study participant flow](image)

**Fig. 1.** Study participant flow. Eighty-nine persons are eventually enrolled.

IBS, irritable bowel syndrome.