

THE EFFECTS OF TWO STRESS MANAGEMENT TECHNIQUES ON FEELINGS OF WELL-BEING IN PATIENTS WITH INFLAMMATORY BOWEL DISEASE

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This paper describes a pilot project designed to assess the effects of two stress management techniques — deep abdominal breathing and massage — on feelings of well-being in a sample of outpatients with inflammatory bowel disease. Inflammatory bowel disease (IBD) incorporates ulcerative colitis and Crohn's disease (Anderson, 1982). IBD is a chronic gastrointestinal disorder which occurs in periods of remission and exacerbation. While stress as an antecedent to IBD remains controversial, the symptoms of IBD such as diarrhea, abdominal pain, and weight loss are stress producing. The problems are chronic and last the duration of the person's life.

Two questions arise:

1. Do stress management techniques promote feelings of well-being among the patients and enable them to better cope with the symptoms of their disease?
2. Does performing stress management techniques alter the degree to which a person perceives a situation as stress producing or promote better ways that an individual could cope with stressful events?

An uncontrolled pilot study was begun to examine the effects of deep abdominal breathing and massage on four categories of well-being in a sample of 15 IBD patients. The intent of the researcher was to design and carry out a pilot study in order to determine whether or not a complete investigation into the relationship between practising stress management techniques and feelings of well-being in IBD patients was warranted.

LITERATURE REVIEW

A review of literature under the headings of inflammatory bowel disease, stress, and stress management techniques is summarized.

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Inflammatory Bowel Disease

IBD is a chronic gastrointestinal disorder. The manifestations of IBD are often severe and affect most aspects of a person's life. The cause of IBD is unknown but various etiological agents have been suspect. These include genetic factors (Cullen, 1982), injurious substances (Beck, 1982), hypersensitivity of the individual (Goodacre, 1982), viruses, bacteria (Baker, 1982), and infectious agents (Tyrell, 1982).

In the past, emotional immaturity and psychological turmoil were thought to cause IBD (Engel, 1955; Fullerton, Kollar, & Caldwell, 1962; Lindeman, 1949; Paulley, 1950; Sperling, 1959). These assumptions now appear controversial when psychological factors in the IBD population have been compared to various control groups (Feldman, Cantor, & Soll, 1967; Monk, Mendeloff, Siegel, & Lilienfeld, 1970; Mendeloff, Monk, Siegel, & Lilienfeld, 1970). While this recent evidence indicates that stress may not cause IBD, the disability caused by bouts of diarrhea, urgency of defecation, abdominal pain, weakness, and weight loss, are worrisome and stress producing (Mallett, Bingley, Lennard-Jones, & Gilon, 1978). In their study of 84 IBD patients attending a hospital clinic, Mallett et al. (1978) discovered that 72 of the patients found their social life interrupted, two-thirds had to change their work routine, and half of the patients reported generalized irritability with their family to be a problem during an attack.

Stress

The effects of stress on the body have been documented. Selye (1976) describes the pathophysiology of stress as follows. A person reacts to a perceived physical, internal or psychosocial stressor by activating a sympathetic nervous system reaction. The hypothalamus and pituitary become involved and produce secretions from the adrenal cortex and adrenal medulla. From the adrenal cortex, mineral corticoids which are proinflammatory and cause sodium retention and protein anabolism, are released. Glucocorticoids are released which then cause protein catabolism and gluconeogenesis. While the adrenal medulla secretes norepinephrine, a peripheral vasoconstrictor which decreases blood flow to the kidneys, epinephrine which causes tachycardia, bronchial dilation and increased metabolism is also released. In the gastrointestinal tract, the proinflammatory response may be a cause of gastrointestinal disturbances and inflammatory conditions.

Selye (1976) proposes a General Adaptation Syndrome response to stress that occurs in three stages. First, an alarm reaction occurs that causes enlargement of the adrenal cortex, enlargement of the lymphatic system and an increase in hormone levels. The second stage is resistance in which there is shrinkage of the adrenal cortex, a reduction in the size of the lymph nodes, and a sustained level of hormones present. While these two stages occur continuously during the life of a person, if the individual for any reason cannot achieve resistance, exhaustion, in which the lymphatic system enlarges and does not work properly, occurs. If exhaustion results, there is also an increase in hormone level and a depletion of adaptive hormones. In terms of coping abilities, physiological and psychological behaviours may become maladaptive.

Stress Management Techniques

On the basis of previous work by the author investigating the effects of five stress management techniques on patients with IBD, the techniques chosen for use in this study were deep abdominal breathing and massage.

Lum (1977) states that chronic anxiety in patients results from the diagnosis of a serious condition and from patients continuing to have distressing symptoms that physicians have been unable to thoroughly treat. IBD falls both categories. Lum describes the fight or flight response in terms of breathing and suggests that to deal with anxiety, patients should learn how to perform relaxation techniques, become aware of improper breathing, and convert thoracic breathing to abdominal breathing. In this study, 700 patients were taught to become more aware of their breathing and to become abdominal breathers. Lum concluded that two-thirds of the patients in his study were cured of their anxiety symptoms and of the other third most developed symptoms of anxiety only in association with severe stress. Less than five percent showed no improvement at all.

Stewart (1976), a childbirth educator, states that practising rhythmic breathing leads to a decreased perception of pain, promotion of physical and mental well-being, an ability to maximize the benefits from rest periods, deeper night time sleep and a release of body tension which cause cramped muscles and produce fatigue. Stewart gave specific instructions for learning how to perform rhythmic breathing. French and Tupin (1974) described five cases which documented the effects of relaxed breathing on patients with serious medical problems. When the patients achieved relaxed breathing, they were encouraged to experience a pleasant memory. The authors found that patients

reported relief from sleep disturbance, a decreased awareness of moderately severe pain and a partial relief of depression often associated with long term medical problems.

Schulte and Abhyanker (1979) describe the mental changes that accompany changes in respiratory status. While hyperventilation produces respiratory alkalosis, controlled slow respiration causes carbon dioxide accumulation which stimulates cerebral circulation, produces mental tranquility and decreased sympathetic activity in the Autonomic Nervous System. The deep abdominal breathing they describe seems to initiate a biofeedback-like control of physiology. The authors suggest further study into the relationship of some yogic practices and psychophysiologic problems.

Udupa, Singh and Settiwar (1975) reported the effects on six normal subjects of a six month course of yogic deep abdominal breathing. Effects included a developing stabilization of respiratory functions and accelerated adrenocortical functions. The accelerated adrenocortical functions may produce differing degrees of stress competence among the subjects.

Massage has been defined as "a group of systematic and scientific manipulations of body tissue which is best performed with the hands for the purpose of affecting the nervous and muscular system and general circulation" (Krusen, Kottke, & Elwood, 1971). Sedation, a physiological effect of massage, is achieved by reflex effects in the skin caused by stimulation of the peripheral receptors which transmit impulses through the spinal cord to the brain (Krusen et al., 1971).

In Chinese medicine massage has been used in the treatment of some illness. Through massage, the Yin and Yang energy pathways are thought to achieve balance and augment the body's ability to fight disease (Theil, 1975).

The effects of therapeutic touch as a means of relieving pain have been documented (Boguslawski, 1980). Although the mechanism has not been clearly explained, it has been shown that also associated with pain relief is a sense of well-being, restfulness and an increase in coping abilities (Boguslawski, 1980). While therapeutic touch and the transmission of human energies will not be dealt with in this paper, it is possible that patients could experience some of the benefits of therapeutic touch as a result of traditional massage.

Longworth (1982) suggests that slow stroke back massage may reduce muscle tension through tactile sensation and also by inhibiting the muscle spindle due to the passive stretch by the massaging hand on the tendinous insertion of the muscles. In her study of 32 healthy normotensive female subjects, Longworth massaged the back of each subject for six minutes. Significant decreases in blood pressure and heart

rate were found. Both skin temperature and galvanic skin response increased. The results of a pre and post state trait anxiety inventory showed that her subjects perceived slow stroke back massage as relaxing.

While noting that little work has been done in this area, Woody (1980) describes five cases in which he gave each person the Sixteen Personality Factors Test and/or the Minnesota Multiphasic Personality Inventory. Then each person completed an anxiety measurement test — the IPAT Eight Parallel Form Anxiety Battery. Each person was then given a one hour body massage. Approximately one hour after massage, each subject again completed an anxiety measurement test. After four sessions all of the five cases demonstrated lower anxiety scores.

METHODOLOGY

Patient eligibility criteria for this study included a diagnosis of IBD made on the basis of endoscopic or radiological findings, no additional medical problems, and a spoken command of the English language.

A sample of 15 outpatients was randomly collected from the files of a consenting gastroenterologist. Patients were contacted by phone, informed about the pilot project and an interview time was set up. At the interview, each patient signed a consent form which stated that he would be taught the techniques over four weekly sessions, that pre and post interview data would be collected, and that he would be free to withdraw from the project at any time without his care being affected. Physician consent for the patient to participate in the project was also obtained. Assessment data were then collected by a research assistant. (See Appendix).

The patients involved in this study were between the ages of 18 and 45 years, had been diagnosed with IBD for over two years and had been hospitalized at least once for IBD. Presently, all were maintained outside the hospital although several reported experiencing difficulty with IBD symptoms, and one patient stated that he was unemployed due to his problem with IBD.

At the beginning and end of each teaching session, pulse and blood pressure were taken and recorded. Patients were taught the techniques of deep abdominal breathing by the same assistant who had interviewed them. Each patient was given half an hour to learn the technique. Patients were taught to inhale deeply through the nose encouraging the abdominal area to relax and balloon out with air. Following a pause, they were told to exhale completely through pursed lips. They

were told that practising this technique would lead to a feeling of warmth in the abdominal area. The patients were instructed to practise deep abdominal breathing a minimum of twice a day and told that they could practise in any setting. Compliance with these instructions was difficult to assess.

Following deep breathing, each patient was given a 45 minute massage. Little talking was done during the massage and patients were encouraged to think about deep abdominal breathing as they relaxed. The patient was placed in the prone position. His back, neck, and shoulders were massaged using techniques of effleurage, petrissage, and friction (Joachim, "Step by Step Massage," 1983). The hands and feet were massaged using the same techniques (Joachim, "How to Give Foot Massage," 1983). In both the hands and feet, tense clenched areas were massaged open and each finger and toe worked in a corkscrew fashion. Following the massage, patients were encouraged to think about how they were feeling and not to get up to leave until they were ready.

The second, third, and fourth visits were spent reviewing and practising deep breathing. All sessions ended with a 45 minute massage. At the conclusion of the fourth session, an interview appointment was scheduled to be held in two weeks. At the interview, the same baseline data were collected by the researcher. In addition, the following questions were asked:

- 1) Which of the techniques helps you to feel more relaxed?
- 2) Which technique, if any, are you using more to achieve relaxation? Why?

RESULTS

With the exception of the pulse and blood pressure information, data from the patient interview were sorted into four categories of well-being and the additional two questions examined for trends. Of the original fifteen patients in the sample, one did not complete all of the sessions. This patient failed to return after the first session. The categories of well-being identified were:

- 1) Increased ability to sleep
- 2) Increased feelings of control over pain
- 3) Increased awareness of the difference between feeling stressed and feeling relaxed
- 4) Increased ability to calm themselves.

Pulse and blood pressure were monitored before and after each treatment for every patient. The pulse rate of all subjects decreased from 5 to 20 points per minute following each session. At the start of each session, patient pulse rates ranged from 58-110. Those with the highest rates dropped the most.

Blood pressure readings were more variable. Readings prior to beginning the sessions ranged from 90/60 to 130/84. Following each session systolic blood pressure readings rose a few points and some dropped a few points. The diastolic readings remained fairly constant. No patterns of change or changes greater than six points in the systolic readings were noted.

TABLE 1
Number of Subjects Improved in Each Category (N=14)

Category	Number of subjects improved
Increased ability to sleep	9
Increased feelings of control over pain	9
Increased awareness of the differences between feeling stressed and feeling relaxed	14
Increased ability to calm themselves	13

The Categories of Well-being

Increased ability to sleep

Nine patients demonstrated an increased ability to sleep. Of the nine, four patients reported being able to fall asleep more quickly using deep breathing than without the technique. The other four patients said that while they had not experienced difficulty falling asleep, they often woke during the night. These patients reported that deep breathing enabled them to return to sleep more quickly than before. One patient said that she continued to have occasional difficulty falling asleep, but felt that she could help relax herself while trying to sleep by thinking about the relaxed feeling that she experienced during massage.

Of the five patients who did not demonstrate an increased ability to sleep, three stated that they never had problems sleeping, and therefore the techniques made no difference to them in terms of affecting their ability to sleep. Two of these patients took sleeping medica-

tion every night and while one of them said that he felt that deep breathing helped him to fall asleep faster, the other noticed no difference in her ability to sleep.

Increased feelings of control over pain

Five of the patients reported that they experienced no pain during the course of the study. Of the remaining nine patients, all of them stated that they felt more in control of pain. The following data were obtained from these nine. Six patients said that deep breathing took the "sharp" and "stabbing" sensations away from the experience of pain. Even though these patients were still aware that pain was present, they said that they felt more in control because they could do something about its severity. One patient commented that focusing on her breathing distracted her from the pain experience and therefore made the pain seem less severe.

Two patients had taught massage to a significant other and asked for and received massage when they experienced pain. These patients said that massage during pain acted as a distractor and a soother to help them cope with pain.

Five of the patients stated that they reduced their pain medication as a result of using the techniques. One patient eliminated all pain medication during the study and others reported taking up to a quarter of their previous doses. All of the nine patients who experienced pain during the study stated that they noticed a relationship between the ability to relax and a decrease in their perception of pain.

Increased awareness of the difference between feeling stressed and feeling relaxed

All 14 of the patients said that they had become more aware of the difference between feeling stressed and feeling relaxed. Eleven of them said that massage gave them a more relaxed feeling than they had ever experienced before. Three patients said that they had previously achieved this feeling through the use of a sleeping pill. One patient said that he had been able to achieve the relaxed feeling that massage gave him through another route but refused to say what that route was. One patient reported that although she was more aware of a difference between feeling stressed and feeling relaxed, she still had difficulty allowing herself to relax. All 14 of the patients commented on their awareness of a change in muscular tension, particularly in the neck and shoulders following massage. Ten of the 14 patients said that they would like to be sure that they experienced this pleasant sensation more often. These patients planned to practise being aware of the differences between tension and relaxation on an ongoing basis.

Increased ability to calm themselves

Thirteen of the patients reported that they felt they were better able to calm themselves than they were previously. No patients were taking anti-anxiety medications during this study. While seven of the 13 patients thought about the relaxed feelings that came from massage, all 13 of them practised deep breathing when wanting to induce the calm feeling.

Patients reported that the degree to which they could calm themselves was related to the situation they were in. One patient reported being able to calm herself during a bus ride which had previously made her anxious because of the unavailability of a toilet. The same patient found it more difficult to calm herself on a visit to her gastroenterologist. Another patient asked a clinic nurse to give him a back massage prior to his sigmoidoscopy. During the test, he practised deep breathing. This patient reported feeling able to calm himself by asking for something that he knew would help and practising a technique that was useful to him. He noted feeling more in control of himself both emotionally and physically.

The one patient who did not rate an increased ability to calm herself, stated that she had always been a very tense person and was unable to "allow herself to relax." She said that it was unclear to her how she could direct her focus away from worry.

TABLE 2
Usefulness of the Stress Management Techniques (N=14)

	Deep Breathing	Massage	None of the Techniques
Which of the techniques helps you to feel more relaxed?		14	
Which technique are you using more to achieve relaxation?	12		2

Which of the Techniques Helps You Feel More Relaxed?

All of the patients stated that massage was the technique that helped them feel more relaxed. Three patients compared the feelings that massage evoked as being like those attained through the use of a sleeping pill. One patient said that massage gave her feelings like those she

experienced in a whirlpool but that she experienced a “more intense” relaxation from massage. All of the patients said that massage relaxed both their bodies and minds.

Reports indicated that the length of time that the effects of massage lasted varied from patient to patient. The range was from one hour to two days. Eight of the patients said the effects lasted between two and six hours.

Twelve patients said that it was the dramatic relaxation effect of massage that made them most aware of the tension they felt much of the time. Awareness of the difference, they said, enabled them to achieve relaxation more quickly now. These patients said that even though the effects of massage were not lasting it was very valuable in helping them to recognize their need to relax. Five patients said that they would appreciate massage being given to them as part of their treatment whenever they visited their physicians or were hospitalized. These patients also commented on the value of massage as a distraction and tool to help them cope with pain.

Only one patient mentioned an initial discomfort at being touched during massage. She also said that the relaxing effects helped her to overcome her negative feelings during the first session.

Which Technique are You Using More to Achieve Relaxation?

Twelve of the patients said that they were using deep breathing more to achieve relaxation. These 12 patients cited deep breathing because it was the technique that they could do for themselves to feel in control. While some patients said that the effects of massage were more definitive, deep breathing was mentioned as being more useful because of their individual control, the short amount of time needed to achieve relaxation and the way in which deep breathing could be practised any place inconspicuously.

Patients also mentioned that deep breathing helped to relax the abdominal and pelvic muscles where they recognized tension to be held. Five patients said that deep breathing distracted them from worry and gave them a warm feeling in the abdomen. Two patients said that following deep breathing, their minds cleared and their thinking was improved. One patient attributed this to increasing the supply of oxygen to the brain.

Two patients said that they had been told to take deep breath during diagnosis tests but prior to the session did not understand how to do this. They said that they planned to do deep breathing during their next tests.

Of the two patients who were not using deep breathing more to achieve relaxation, one patient said that he was now talking about factors that caused him worry, and that the honest communication with his partner was the technique he used most to achieve relaxation. This patient said that she found it difficult to make the time to practise, had always been a tense person and found it very difficult to relax under any circumstance.

CONCLUSIONS

The prevalence of IBD patients within the general population is estimated at 90-300 per 100,000 (Mendeloff, 1980). A sample size of 15 patients has been randomly chosen as representing the population. From the data obtained from 14 of the patients in this study, it can be concluded that several patterns of response have been established. The majority of the patients demonstrated improvement in the categories of well-being, felt that massage was the technique that produced greater relaxation, yet actually used deep breathing more to achieve relaxation. It is interesting to note the patient reports that while massage promoted a greater degree of relaxation than deep breathing, deep breathing was the more used of the techniques.

From the results of this pilot study, it seems that further investigation into the relationship between practising stress management techniques and their effects on feelings of well-being in IBD patients is warranted. Use of a control group would give additional data. More stress management techniques could be added, tested and results compared. A longer period of study time with more follow-up interviews would give additional information.

Further study might be done in the area of stress prevention — that is, would deep abdominal breathing prevent tension and therefore could it be used before pain or stress related illnesses occur to prevent these maladies? The application of massage during the experience of pain might be investigated to determine its usefulness in decreasing the perception of pain while pain is occurring. An outcome of further study could be a program into the development of techniques focusing both on preventing stress and pain and on self-help pain relief.

The author is planning to study the development of new stress management techniques in patients with IBD. Special emphasis will be placed on the area of preventive measures and their effects in reducing the level of stress in the IBD patient.

APPENDIX: PRE AND POST INTERVIEW QUESTIONNAIRE

Patient Code Number _____

Current medications _____

Allergies _____

Pulse	Session I	Pre_____		Session III	Pre_____
		Post_____			Post_____
	Session II	Pre_____		Session IV	Pre_____
		Post_____			Post_____
Blood Pressure	Session I	Pre_____		Session III	Pre_____
		Post_____			Post_____
	Session II	Pre_____		Session IV	Pre_____
		Post_____			Post_____

1. Are respirations thoracic/abdominal? Thoracic__ Abdominal__
2. Describe your sleep and rest patterns:
3. Has your energy level changed recently? Yes____ No____
4. Do you experience pain? Yes____ No____
5. Where is your pain?
6. Rate your pain

1	2	3	4	5
little pain				very severe
7. What is your body doing when you are under stress?
8. Do you have methods of dealing with your pain? Yes____ No____
9. What are your ways of dealing with pain?
10. Rate the effectiveness with which your methods help you to deal with pain

1	2	3	4	5
not effective				very effective
11. Are you aware of stress in your body? Yes____ No____
12. Rate your awareness of the difference between stress and relaxation in your body

1	2	3	4	5
not aware at all				very aware
13. What is your body doing when you are under stress?
14. What is your body doing when you are relaxed?
15. Rate the degree to which you are able to help yourself to relax

1	2	3	4	5
not at all				very much

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RÉSUMÉ

Les effets de deux techniques de contrôle du stress en vue de favoriser le bien-être de malades atteints de troubles gastro-intestinaux

Ce projet pilote avait pour objet d'examiner les effets de deux techniques de contrôle du stress (profonde respiration abdominale et massage) en vue de favoriser le bien-être de 14 malades en consultation externe chez lesquels on avait diagnostiqué des troubles gastro-intestinaux. Même si l'on ignore le rapport exact qui existe entre le stress et les troubles gastro-intestinaux, on sait que les symptômes de ces troubles sont générateurs de stress. On a obtenu le consentement libre et éclairé des malades et l'on a rassemblé des données d'évaluation. On a enseigné aux malades les deux techniques au cours de quatre séances hebdomadaires. Lors d'une entrevue d'évaluation deux semaines plus tard, on a recueilli de nouvelles données que l'on a réparties en quatre catégories de bien-être. On a noté l'amélioration qui s'était produite dans ces quatre catégories. Tous les sujets ont évalué le massage comme la technique de relaxation la plus efficace même s'ils utilisaient plus souvent la technique de la respiration profonde. On a tiré des conclusions préliminaires et formulé des recommandations visant à approfondir cette étude.