The Clinical Management of Stress:

Non-Pharmacological Approaches

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1. Introduction: Stress and Illness

2. What is Stress: An Overview

3. Measuring Stress

4. Self-control strategies and the relaxation response

5. Self-control stress management strategies

    - 5.1 Meditation
    - 5.2 Biofeedback
    - 5.3 Autogenic Training
    - 5.4 Progressive Relaxation
    - 5.5 Systematic desensitization
    - 5.6 Hypnosis
    - 5.7 Behavioral self-management

6. Considerations

    - 6.1 Preparation
        - Motivation
        - Individual Responsibility
        - Relationship
    - 6.2 Assessing type of stress
    - 6.3 Assessing client characteristics
    - 6.4 Choosing a strategy

7. Evaluation and follow-up

8. Summary

It has been suggested that between fifty and seventy percent of the patients seen in general medical practice by family physicians have an illness which is either stress-induced, or exacerbated by stress (1). There is also evidence that stress is associated with increased utilization of health care (2) and with increased morbidity (3). As medical specialists at the forefront in recognizing and advocating the need to treat "the whole person" (4), including consideration of the patient's psychosocial context, family physicians in particular require a sensitivity to the existence of stress-induced or stress-compounded diseases. Teaching their patients methods by which to deal with and manage stressful life events is also essential.

This paper will review ways in which the physician can identify stressful events present in the patient's life which may be exacerbating the disease process; and overview non-pharmacological strategies for alleviating stress which can either be taught directly to the patient by a properly trained primary care physician or which can be mobilized on the patient's behalf through a well-informed referral.

The emphasis of this article on non-pharmacological approaches is not intended to be exclusionary of drug treatments, but merely to right the balance by providing an alternative or complement to pharmacological interventions. Of course, at times drugs may be essential in treating anxiety, tension or other stress-related reactions. For example, in an acute crisis, where the patient is initially too decompensated to face and deal with threatening life issues, the use of a minor tranquillizer might be indicated. However, all too often, medication becomes an end state in

treatment, rather than a means to re-establishing sufficient personal equilibrium to tackle major lifestyle changes. Further, research indicates that medication itself may become a problem, due to side effects, physical addiction, or psychological dependency (5), (6).

By contrast, there are several advantages to a nonpharmacological approach. First, as has been indicated, this approach may be used to complement, rather than supplant, standard drug treatment. Second, non-pharmacological procedures may not only alleviate the symptoms of stress, but can also be used to directly effect positive lifestyle changes, eg. teaching the patient when they are "reflexively" activating their emergency response system at inappropriate times, based on misperceived issues. Further, many of these techniques can be learned by the physician and do not require expensive referral. In addition, many of these techniques are easy for the patient to learn as well. They can thus provide the patient with a sense of competence, as well as the calm peacefulness associated with relaxation. In addition, there are few adverse side effects for these nonpharmacological techniques reported in the literature (7). For multiple problem patients, such as the psoriasis patient with sleep disturbance, the effects of some of these techniques are non-specific, so that several different conditions may be positively effected by the same treatment strategy. Finally, the non-pharmacological strategies put an emphasis on patient self-responsibility, and thus have the serendipitous effect of teaching the patient something about participation in his or her own health care.

What is stress: an overview

Stress has been defined either as an environmental stimulus (stressful

event) (8); as the individuals response to that stimulus (stress response) (9); or as the interaction between the two (10). Selye has defined stress as a non-specific (stereotyped) response of the body to any demands made upon it (11). This standard response of the body to events includes heightened sympathetic arousal and adrenocortical secretion. Selye describes the way stress effects the body over time as the General Adaptation Syndrome. After an initial "alarm" response, the body then becomes resistant. But if the stress continues, eventually the body's resources will be exhausted. This syndrome, empirically confirmed by Selye, was hypothesized by Canon in his work on the "fight or flight" response, the emergency response of the body to danger either real or imagined (12).

It should be noted that stress is not always a pejorative concept. In this article, we are referring to "overstress," or dysfunctional stress, what Selye has labeled distress. However, clearly stress can be a motivator, generating a sense of excitement and heightened wellbeing. At times it may also be necessary to activate the fight or flight system. Selye refers to this positive aspect as eustress. In fact, as is discussed more fully in the technique section, one of the tasks of the physician is to help the patient distinguish when the stress response is functional, and when it is merely an overlearned or genetically obsolete, primitive limbic response.

Measuring stress: Stressful events and an individual's "person-specific" response to stress.

It is important to distinguish between stress as an independent variable, as a dependent variable, and as a moderating/mediating variable. When stress

is viewed as an independent variable, we then look for the effects of different levels of stress on a dependent variable, such as "illness" (13). One of the best examples of measuring stress as an independent variable is the Social Readjustment Rating Scale (SRRS), developed by Holmes and Rahe in 1967 (14). This scale gives certain "change events" in an individual's life a numerical score. If the person has a score of less than 150 points during the past year, extensive research has shown that there is a 30% likelihood of health change during the next two years for that individual. A score of 150-300 indicates a 50-50% probability, and over 300 there is a 90% chance of health change. Health change is defined as a psychological disorder, a serious illness, or injury.

Stress may be measured as a dependent variable by a number of psychological tests, including Speigelberg's State-Trait Anxiety scale, the Taylor Manifest Anxiety scale, and Bendig's Anxiety scale (15). Each of these scales attempts to determine whether, as a result of an intervention, perceived stress in the life of the individual in fact decreases. Physiological measures which can be used to assess stress as a dependent variable include galvanic skin response (gsr); muscle tension (electromyogram); blood pressure; and other metabolic indicators such as oxygen consumption.

Finally, stress may be conceptualized as a moderating variable, hypothesized to explain <u>why</u> a certain intervention has an effect. For example, it has been argued that teaching relaxation approaches to individuals with bronchial asthma, hypertension, type-A personalities, psoriasis, and allergies, will decrease the severity of symptoms accompanying those diseases (1). The assumption is that if the dependent variable changes in the desired direction (i.e., a decrease in blood pressure), this may be attributable to the patient's having successfully

learned a self-control/relaxation strategy.

Self-control strategies: Non-pharmacological approaches to stress management.

What is a self-control technique? As self-control strategy refers to a family of techniques which an individual makes a conscious effort to practice in a regular, systematic manner in order to influence his/her cognitive and/or behavioral activity in a desired direction. Initially, however, these strategies must be taught to the patient by the physician, teacher, or therapist, who must be clinically knowledgeable about these techniques and often should have had some experiential familiarity with them. Mahoney (16) defines self-control as a social label which is differentially applied to some behavioral patterns. He identifies four characteristics of self-control.

1. A behavior pattern is not considered self-regulatory if it is apparent to the labeler that said behavior is receiving prompt reward or punishment.

2. We do not give people self-control credit for something they seem to have been doing effortlessly all their lives.

3. The term self-control is reserved for performances which are considered socially appropriate or desirable.

4. More often than not, self-control involves some degree of self-sacrifice.

Self-control is not will power, and is better explained by principles of social learning rather than inherited strengths (17). It involves awareness of and the skills to arrange circumstances that affect an individual's behavior. Some important components of self-control are self-awareness, environmental awareness, and competency in applying specific psychological skills to effect personal change (18).

The relaxation response. Benson has referred to the general pattern of physiological changes which occur during the practice of stress-management strategies as a hypometabolic state, or "relaxation response" (19). This response is considered to be the opposite of the fight or flight response described earlier, and involves a lowering of blood pressure, a reduced heart rate, a decrease in oxygen consumption, etc. The relaxation response is considered to be incompatible with the physiological changes which accompany a stress reaction; thus, inducing the relaxation response counteracts the effects of stress.

Meditation. Meditation refers to a constellation of techniques that involve the conscious effort to focus attention in a non-analytical manner (20). Two general types of meditation have been identified (21). Understanding of these two types can be facilitated by recourse to brain neurophysiology (22). We know that in terms of awareness, the brain can either focus like a wide angle lense or like a zoom lens. One type of meditation, concentrative meditation, refers to focusing like a zoom lens on one particular object (word, phrase, picture, sound) to the exclusion of all other stimuli in the external and internal environment. The second type of meditation, opening-up meditation, refers to focusing like a wide-angle lens on all sensations, feelings, inputs that are occurring simultaneously outside and inside the meditator. The object of both meditative practices is to "simply observe." Individuals are instructed to not become caught up in dialogue with their own thoughts, images, etc., but merely to watch them and eventually let them "flow down the river" (20). In general, the clinical research suggests that meditation is a promising strategy for stress and tension management, hypertension, and even for decreasing addictive behaviors (15, 20). Its effectiveness appears to be due primarily to the reduction of internal cognitive chatter, and a constellation of physiological

changes which occurs in practitioners. Initial effects seem clear within the first 4-10 weeks of practice (23).

Biofeedback. Biofeedback encompasses a group of techniques which use electronic monitoring instruments to augment the body's own internal signals, magnify them, and then provide either audio and/or visual feedback to the patient (24). The goals of biofeedback training are 1) to increase awareness of relevant physiological functions 2) to develop control over these functions 3) to generalize this control from the laboratory to the real world (25).

Types of biofeedback instrumentation include electroencephalogram, electromyogram, galvanic skin response, and temperature training. EMG and temperature training are used most commonly as they are the easiest to learn and give the quickest positive response to the patient. Because of problems of measurement, EEG is not used too frequently as a clinical tool. In the training itself, the individual is instructed to try to make the tone frequency increase by whatever means work for him/her. In temperature training, for example, each time the individual causes his/her temperature to rise, a tone sounds.

Biofeedback, like meditation, appears to be a promising intervention strategy although research suggests it may be more effective with cyclic disorders such as headache than with problems which persist consistently over time such as hypertension (25). Clinical issues currently under consideration (26, 27) in biofeedback circles include the fact that relaxation of one muscle group (e.g., relaxation of the frontalis muscle for headache) does not necessarily generalize to other muscle groups. Therefore, biofeedback provides more specific direct relaxation of particular problem areas than does meditation,

but less overall relaxation. Another issue being examined is which type of biofeedback is better for which types of clinical problems. For example, it has now been established that for certain types of headache (e.g., migraine) temperature biofeedback is more effective (28). Also a concern is whether physiological control established in a laboratory setting with biofeedback equipment can effectively be generalized to the natural enviornment in which the stress occurs but where no equipment is available (25, 26).

Autogenic training. This technique, developed by Schutz and Luthe (30), involves different statements which an individual can make internally, such as my hands are feeling warmer, my legs are feeling warmer, my heart is slowing down, my breath is becoming calmer. These statements are designed to develop specific types of relaxation sensations in various parts of the body. Often autogenic training is used in conjunction with biofeedback as one specific set of cognitive strategies a person can use to facilitate accomplishment of the desired physiological changes.

Progressive relaxation. This technique, developed by Jacobson (31), involves having the individual differentially tense and relax large and small muscle groups, progressing systematically from one end of the body to the other. A tape or direct instruction by the therapist is used to facilitate this exercise. The patient is instructed to proceed through the tensing and relaxing of various muscle groups until the entire body is in a state of deep muscle relaxation. At the same time, cues are given to the individual to pay attention to the contrast between tension and relaxation, to identify

the warmth and heaviness of the relaxation experience etc. This technique is sometimes combined with positive imagery and visualization techniques to further enhance the experience of relaxation.

Systematic desensitization. An additional technique often used in conjunction with deep muscle relaxation is sytematic desensitization (42). This technique may be used to address the patient's unhealthful panicked or anxious response to stress. The individual is instructed to make a hierarchy of anxiety-producing or stress-inducing events, and then is taught to systematically combine the visualization of these events with a state of deep muscle relaxation. The therapist works with the individual so that the patient can eventually learn to go through the hierarchy independently, being able to maintain a state of relaxation and calm in the face of presentation of the stress producing, noxious image. Theoretically, it is assumed that relaxation is incompatible with tension and therefore counterconditions to it.

Hypnosis. Hypnosis is currently experiencing renewed popularity in medical settings (33), although researchers and practitioners still disagree on an all-encompassing definition of hypnosis. Some maintain (33) that hypnosis produces an altered state, trance experience in the subjects. However, others, of whom T.X. Barber is the primary proponent (34), assert that most of the achievements accomplished while under hypnosis are within the range of normal human capabilities; thus, positing the existence of a hypnotic trance is unnecessary. In any event, hypnotic techniques involve, to a greater or lesser degree, suggestability, deep relaxation, placebo effect, and intense transferrence (35). Hypnotic induction may include cognitive statements, attentional focus (e.g., on the palm of the hand), and sometimes imagery

(36). Hypnosis may be both therapist induced or self-induced. A distinction is also made between direct and indirect hypnosis. Milton Erickson is the noted authority on the latter process (37), in which the therapist gives certain cues and verbal and nonverbal innuendos to induce a state of hypnosis in the patient, without ever setting up an explicit contract with the patient for hypnosis to occur. The ability to experience hypnotic suggestion depends on the person's hypnotic responsiveness, which some believe to be a relatively stable attribute (33). Others suggest that hypnotic susceptibility can be learned (38). In terms of stress reduction, hypnosis is useful in producing feelings of calm and tranquility.

Behavioral self-management. Behavioral self-management strategies are techniques derived conceptually from social learning theory (39). The initial self-management strategy is behavioral self-observation (40), a technique designed to teach the patient to monitor in a precise way his/her own behavior in relationship to the environment. For example, in the case of stress, behavioral self-observation can be used to help the patient become aware of his/her person-specific response to stress: physiological cues -- eg., butterflies in the stomach, tension in the neck, sweaty palms; cognitive statements, eg., I feel out of control, helpless; and images, eg., a visualization of falling of disintegration. The individual is then instructed to observe the antecedents to stress (i.e., which persons, events, places, thoughts, feelings seem to trigger stress responses) and the consequences: how the patient normally copes with stress (e.g., eating, drinking, avoiding, depression etc.).

At this point, the individual may be instructed to practice a variety of coping (41, 44) or mastery (42) strategies tailored specifically to him/her, focusing

on a more beneficial rearrangement of cues and consequences. These techniques include environmental planning (rearranging the environment) and behavioral programming (appropriate contingent use of reinforcement and punishment (43).

In coping strategies, the individual learns to make the stressful input a cue for relaxation, rather than for anxiety. Then the individual practices a stress innoculation training (44), which emphasizes modification of internal dialogue through a sequence of graduated practice. Here, the goal is to modify the patient's stress-related reactions by training him or her to talk differently to him/herself about the stressful problem. Stress innoculation training substitutes analysis and relabelling for the panic reaction, and emphasizes the importance of successive approximation and rehearsal, as well as self-instructions and relaxation imagery.

Multimodal Behavior Therapy. A variant of the above techniques is Lazarus' BASIC ID (45), an acronym representing an approach to stress (and indeed to all patient problems) which addresses seven potential areas for therapeutic intervention: behavior, affect, sensation, imagery, cognition, interpersonal relations, and drugs. Multimodal behavior therapy thus attempts to cover the wide range of variables inevitably controlling any given disorder in an eclectic yet systematic fashion.

Important Considerations in the Application of Stress Management and Self-Control Strategies.

The strategies mentioned above, though shown to be effective for the management of stress when regularly practiced by the client, are not magical

cures. They require the patient's cooperation and as such raise important issues for physician consideration. These issues include preparation of the patient for the techniques; choosing an appropriate strategy; adherence and compliance; and evaluation.

Preparation.

Motivation. Before introducing a self-control strategy, it is necessary, at least informally, to assess patient motivation. Does your patient really want to decrease or manage stress? For example, some people may feel that stress is the "glue" that holds them together. Even though at times they may wish to reduce stress, or are aware of the dangers of a stressful lifestyle, they also fear what would happen if they didn't have stress as a motivation. Often the classical type A personality, who feels that a hard driving and competitive lifestyle is necessary for success, may risk potential myocardial infarction in exchange for avoiding failure (46). The stress reactions which some people may experience, or the illnesses exacerbated by stress which they suffer, may also include a component of secondary gain. Despite apparent misery and distress, your patient may be resistant to change because of the attention received from an otherwise aloof and preoccupied family.

In addition to assessing barriers to change, the physician must also evaluate positive motivation. Is the patient aware of positive reasons to adopt a self-control strategy or is this merely a situation of pro forma lip-service? Focusing the patient on positive consequences can often be a powerful motivator: e.g., feelings of competence; inner relaxation and calm; more positive energy to enjoy and experience.

Individual responsibility. The concept of self-control implies an individual performing these strategies at his/her own volition. Old models of the dependent, passive patient without any involvement or responsibility for his/her own health care will not work within the context of self-control skills (47). The physician needs to use his/her traditional high status and aura of omnipotence to firmly and supportively communicate the importance of self responsibility in the health care process.

Relationship. A related factor is the patient's relationship with the physician (48). Successful implementation of a self-control strategy, indeed of any prescribed medical regimen, depends in part on the patient's rapport with and trust for the physician. By adopting a warm, sincere, and empathetic attitude toward the patient, the physician can facilitate the teaching of these skills and encourage and support their practice. Attention to "the whole person" (49) will stimulate both the development of individual responsibility and successful adoption of the self-control practice.

Assessing types of stress. Individuals respond differently to stress. Generally self-observation by the individual client of a potential stressor is indicated to determine in fact what role this stimulus plays in the patient's life. The physician should work with the patient to ensure sensitivity to cognitive, physiological, and symbolic (imaginal) manifestations of stress.

Assessing client characteristics. Generally, if the patient appears highly dependent, with a high external locus of control, the physician will need to take a stronger initial posture in teaching self-control strategies (50, 51). The physician may also need to work on the patient's belief in his/her own ability to exercise some mastery over themselves and their environment (52).

Second, the physician should assess the patient's beliefs and attitudes toward the different self-control strategies under consideration. Each of the techniques described earlier has gone through "popular" phases, where they have been embraced by the lay community, and thus already generally have some face recognition. Some patients may not like the scientific precision of biofeedback; some may be attracted to it for precisely this reason. Similarly, the terms hypnosis and meditation may evoke either positive or negative responses in the individual. At this point in the state of our knowledge (with the few exceptions mentioned below), all self-control techniques appear to work equally well in stress management; all work better than a placebo, but none better than another (53). Therefore the choice of a strategy should take into consideration the patient's attitude toward it.

Choosing a strategy

One of the reasons why the self-control strategies may be equally effective, names and labels aside, is that almost all of the techniques involve attentional focusing, cognitive statements and/or imagery. Further, a general antistress response in the individual has been posited (54), which identifies a common pathway shared by all the self-control techniques which promotes a pattern of psychobiological responding antithetical to the stresses of daily living. Thus, as a general rule, selection of a particular technique depends largely on the individual practitioner's own familiarity and comfort with the technique, pragmatic considerations in training (e.g., access to biofeedback equipment), and patient attitude.

However, preliminary research indicates the following differentiations among strategies which also need to be taken into consideration:

1) For detecting a precise functional relationship between the patient's environment and stress, behavioral self-observation is the treatment of choice (43).

2) For tension headache, EMG biofeedback is the treatment of choice; for migraine headache, temperature training (55, 28).

3) Between meditation and biofeedback, for "general relaxation" meditation is the treatment of choice; for a specific stress area, biofeedback (26).

4) For cognitive stress, a cognitive strategy such as hypnosis or meditation appears more effective than a somatic strategy (56).

5) For somatic stress, exercise or progressive relaxation appears to be more effective (56).

6) For a person with a primarily auditory response system

   a. when using biofeedback, a visual feedback stimulus is preferable (57).

   b. when using meditation or hypnosis, an auditory stimulus is preferred (58).

Adherence and Compliance

In considering any treatment strategy, issues of adherence and compliance must always be in the physician's mind. In addition to assessing initial motivation, the physician should also be sensitive to decreasing motivation over time and possible negative experiences undergone by the patient. Once initial enthusiasm for the technique has dissipated, patients may not structure

practice periods unless they receive continued encouragement and attention from the physician (55). Also, because occasionally negative experiences occur during the practice of a technique (e.g., feelings of sadness, depression, withdrawal, unpleasant images) the physician must be vigilant in continuing to monitor the patient's experience of the self-control practice and to deal in a therapeutic manner with any such occurrence. If the disturbance appears particularly severe, referral for psychotherapy may be indicated.

Maintaining the self-control behaviors may often be facilitated by the pleasurable nature of the experience itself, or by the reduction in presenting symptoms. In addition, it may be useful to enlist the family or other social contacts as a support system. It is often possible to make the practice of meditation or progressive relaxation a family exercise, which may have unintended benefits as well in terms of improving family togetherness and harmony. Setting up a contract with the client (59), and specifying special instructions and reminders (60) will also ensure improved compliance.

Evaluation and Follow-up

Despite research and clinical findings currently reported in the literature, because individuals are unique, no one strategy will necessarily be "right" for an individual patient. At this state in our knowledge, practicing physicians, as scientist-observers, need to carefully evaluate the efficacy of the self-control strategies they employ. Is the patient following instructions? Adhering? Making progress? If not, why not? Might another strategy be more beneficial? How will a decrease in stress in one family member effect the entire family system? These and similar

questions deserve careful attention, and will help contribute to a more complete science of the clinical management of stress.

Summary

In this article we have overviewed the nature of stress in relation to disease and some ways of measuring stress. The nature of the relaxation response was identified, and various self-control strategies briefly described. Issues of 1) motivation, 2) individual responsibility, 3) doctor-patient relationship, 4) type of stress, 5) client characteristics, 6) and adherence/compliance, were also briefly mentioned.

Although the issues are complex, and the supporting research only in an embryonic state, the application of nonpharmacological approaches to stress management appears critica to patient self-care, and an important practical tool for family physicians to have at their disposal.

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