Enhancing the Credibility of the Applied Psychophysiological Approach Via a Stress Reduction Program for Medical Students

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Introduction
At Eastern Virginia Medical School attempts are underway to address the challenges of educating medical students to accept and learn to utilize a psychophysiological approach to their own stresses. In time it is hoped that they will apply this knowledge to their future care of patients.

Teaching behavioral medicine to medical students is an extremely difficult task. Most students look upon this as a "soft science," which is often taught at a time when they are vigorously learning the "hard science," such as anatomy, physiology, and biochemistry. Behavioral medicine is a much less definitive science to teach and harder for most medical students to accept. To make the behavioral aspect of medicine more relevant to their individual needs, a course titled "The Doctor, The Patient" was developed by the first author, Dr. Davies, and introduced some four years ago. This course was presented in the first semester with the goal of helping students to gain a deeper insight into the doctor/patient relationship. Students were motivated to examine the doctor/patient relationship in the context of personal and family issues that might be affecting both the patient and the doctor. In addition, the social, psychological, ethical, and economic factors which could impact on a patient's illness were also explored.

At the end of the first year another dimension was added, namely a two-hour lecture on the psychophysiology of stress (threat perception), and an introduction to biofeedback and self-regulation coping techniques. This presentation was included in response to the students' many stress related disorders, identified in the process of the new course. Further, the instructor intended the presentation to help students accept stress as a factor contributing to their own illnesses and those of future patients. The second author, Dr. Wickramasekera, provided a two-hour presentation as an introduction to the basic concepts of psychophysiology and biofeedback. The teaching approach included showing students how stress could affect their personal psychophysiology. All one hundred students were taught group self-hypnosis and systematic desensitization as tools to reduce personal stress just before a biochemistry final exam.

All of the students were asked to take their heart rate before and after they were taught self-hypnosis. They reported the following results: decreased heart rate (60%), increased heart rate (18%), and no change (23%). Eighty-six percent of the students stated that they felt subjectively relaxed, a higher rate than would be indicated by the data on heart rate reduction. The mean rate for the depths of relaxation attained was 8.0 on a scale running from 0 (not relaxed) to 10 (deeply relaxed). This was remarkable in view of the fact that these students were scheduled to take a stringent biochemistry test one-half hour after the end of the session of self-hypnosis.

Over 70% of the students reported the suggested side effects of heaviness, numbness, and tingling. Only 25% spontaneously felt the non-suggested deep hallucinatory side affects of floating body parts, expanding or contracted body parts, and displacement of body parts. Non-suggested emotions and subjective perceptions reported by the students included calmness (83%), hallucinated visual sensations (35%), pleasure (17%), spatial sensations (11%), tactile sensations (7.5%), auditory sensations (7%), joy (5.6%), sadness (5.6%), gustatory sensations (3.8%), olfactory sensations (1.9%), and fear (1.8%). Overall 77% of students were pleasantly drowsy. The majority of the students reported that the self-hypnosis and desensitization enhanced their performance on the biochemistry exam.

At the end of the course, the evaluation of this particular two-hour presentation on stress and psychophysiology was so positive that it was included on a permanent basis. Other positively evaluated components of the course included:
1) Identifying personal and family issues impacting on the student as well as the patient;
2) Understanding the effect of these issues on the health of the student as well as that of the patient;
3) Recognizing how these issues may influence the way students and patients interact with each other; and
4) Taking several abbreviated tests to learn their own High Risk Factors for Threat Related Disease (Wickramasekera, 1979, 1988).

Students were also taught to identify stress in their own lives, and recognize how stress affects their psychophysiology and contributed to the development
of illness. They were taught stress reduction through self-hypnosis to cope with these perceived threats. This session on psychophysiology and stress has now been repeated for the last three years, and has encouraged many medical students to seek help. Previously the majority would probably have denied that they had a stress related problem.

Case Example “Jim”

One such student was a 25-year old male who was the first in his family to enter the medical profession, coming from a family where the sons became either police officers or entered the military. During an initial encounter with this student it was discovered that he had been refused admission to the police academy on the basis of failed psychological testing. He was randomly assigned as a student patient to Dr. Davies during his first month of medical school, and he could be repeatedly found sitting outside her academic office. His visitations ranged from a minimum of twice a week to a maximum of five times a week, plus several out-patient appointments in the family practice clinic. In addition he presented in the emergency room once and in the urgent care section of the family practice clinic on three occasions. His major complaint at this time was left knee pain, and on each occasion that he was seen by his primary care physician he requested that his knee be X-rayed as he felt that the chronic pain was due to severe arthritis of the knee. This was despite the fact that he was actively exercising daily and rejected all recommendations to rest the joint. His emergency room visit was not authorized by his primary care doctor and at this time the knee was X-rayed with negative results. Nevertheless, he remained unassured and he began to ask advice from upperclassmen concerning various diagnoses and treatments. As the stress of the first semester escalated, he also developed allergies. These manifested as subjective symptoms with no physical signs ever being observed by his physician. He was becoming increasingly impatient with the inability of his primary care physician to assist him, and at the same time she was becoming frustrated by his lack of insight into his various complaints.

During the lecture on psychophysiology, stress and High Risk Factor testing (Wickramasekera, 1979, 1988), he discovered that he had high hypnotic ability and this seemed to explain his symptoms and pleased him immensely. He went by self-referral to Dr. Wickramasekera who, after consultation with the primary care provider, Dr. Davies, decided that he would attempt to help this patient’s chronic pain by using biofeedback and self-hypnosis for self-soothing. The referral was primarily to help him cope with his chronic pain, with a secondary goal of reducing the number of times he was calling and meeting with his primary care provider. The results of his tests are as follows:

Testing on the High risk Model of Threat Perception (HRMTTP) revealed that Jim was 1) high on hypnotic ability, 2) high on catastrophizing, 3) low on support systems, and 4) low on coping skills. People who are high on hypnotic ability are prone to “surplus pattern recognition” or to finding meaning in randomly distributed events. They also have vivid imaginations that can reach hallucinatory intensity. Therefore, if they are prone to catastrophizing their vivid imaginations and tendency to find meaning in unrelated events, they can amplify their fears and doubts causing their emotions to spiral out of self-control and drive their sympathetic nervous system into patterns of sustained muscle tension. Jim’s social isolation and lack of “self-soothing” coping skills may also have incubated his somatic fears. The goal of therapy was to teach Jim to turn his high hypnotic ability around, and use it to self-soothe or to attenuate his fears, and to re-direct his creativity and imagination into improving his catastrophic somatic cognitions and to rationally and empirically challenge them.

Very quickly after he began to receive weekly hypnotherapy and biofeedback, his demands on his primary care provider dramatically dropped, his pain almost disappeared, and his allergies were forgotten. He passed all his tests and went home and enjoyed his summer away from medical school. In his second year, he was seen intermittently. Dr. Wickramasekera worked with him on feelings of isolation present since childhood, and on anger towards his family. He became a firm believer in the effects of stress on his psychophysiology.

At the end of his second year, he discovered that his therapist, Dr. Wickramasekera, was leaving. Jim was also scheduled at this time to take his final examinations, followed by national board examinations. He developed chest pain, and visited the emergency room. Jim concluded from his symptoms and from the emergency visit that he was at high risk for a heart attack, and should receive a chest X-ray and EKG immediately. The next day he visited his primary care provider, who could verify no risk for heart disease, and refused to order an X-ray or EKG. She reminded him of the effects of stress on his physiology and reminded him of the strategies he’d learned to

Dr. Wickramasekera demonstrates a stress profile in the lab at Eastern Virginia Medical School.

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program and weight management. Regular continued practice of relaxation and biofeedback techniques seems to be necessary for maintenance of lowered BP, similarly to regular exercise and attention to diet.

Educational opportunities for medical and graduate students, residents and interns can be enhanced by involving them in primary care. Trainees will see a greater variety of patients in many stages of their conditions and as a result, will receive improved training. The education of primary care physicians in psychophysiological methods can multiply the benefit to patients from this approach.

Finally, a wealth of research opportunities exists in primary care. The extended range of patients and problems allows for the development and refinement of new techniques and approaches. The breadth of patients encountered and the opportunity for collaboration between practitioners of different disciplines fosters greater generalization of research findings.

Conclusions

Primary care medicine offers rich opportunities for psychophysiology, not only in practice, but also in training and research. The philosophy and patients in these settings are well suited to our approach. Family medicine in particular has stressed behavioral science training in its curriculum, and as a result would be receptive to collaboration. Residency training programs in family medicine generally have behavioral scientists on staff; these individuals would be the logical contact point for entry into these settings. Adapting to the changing medical arena that stresses managed health care and the role of primary care, has led many specialists to whither and grow weaker. Because of its vitality, breadth and utility, psychophysiology is in a strong position to prosper in partnership with primary care.

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reduce stress. He refused to accept that his chest pain was stress related. He widely denounced his primary care provider as inadequate, and attempted to change to another physician.

As the stress of the second semester subsided, and he passed final and board examinations, Jim reconsidered his opinion, and admitted that stress had probably caused his chest pain. This following year, in spite of the loss of his therapist and an arduous academic year, he has been relatively symptom free. He has assiduously used self-hypnosis to reduce stress, and has expanded his social support system.

Conclusion

Despite the fact that this is a single two-hour session during the first semester of the first year of medical school, the impact of introducing the concept of psychophysiology to medical students at this stage in their careers cannot be overemphasized. As this case history illustrates, we can dramatically change the way a future doctor manages his or her personal symptoms and it is not unreasonable to expect that he will translate this into future management of patients. If intervention of this kind does not occur, this type of somatizing doctor may self-medicate and self-investigate, with consequent dysfunction throughout residency and beyond. Hopefully, if more courses can be included early in the medical school curriculum and are emphasized in the third and fourth years, the benefits will enhance the health of future patients and also the well-being of future doctors. It may also erode the mind-body dichotomy that has limited the effectiveness of a strictly biomedical model of chronic disease.

References


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