

## **THERAPEUTIC MODALITIES FOR PREVENTING AND MANAGING ANXIETY IN DENTAL PATIENTS:**

# **Behavioral Methods and Research Issues In the Management of the Adult Dental Patient**

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This paper is written from the dental clinician's viewpoint. Review of the psychological literature relating to anxiety suggests certain techniques are useful: among them are desensitization, modeling, distraction, cognitive restructuring, relaxation, emotive therapy, and hypnosis. Many types of treatment appear relatively successful in curing social phobias, snake phobias, fear of heights and airplanes, but researchers do not agree on what are the therapeutically active or essential ingredients. Similarly, the results of case studies of dental fear treatment are generally positive. In six representative clinical studies where treatments were compared to ineffective controls, or where pre/post changes were studied, all showed significant decrements in fears.<sup>1-6</sup> Nonetheless, researchers in dentistry have attempted to apply and evaluate specific therapeutic techniques in a new setting without resolving the essential ingredient question. Thus, the predominant result in six major intervention studies cited by Ayer and Corah<sup>7</sup> comparing supposedly effective therapies to each other is no significant difference between treatments.<sup>8-13</sup> The case studies (e.g., Ayer and Gale,<sup>2</sup> and Klepac<sup>4</sup> on systematic desensitization, Kleinknecht and Bernstein<sup>14</sup> on symbolic modeling) are most useful because treatments are described well, and the individual data are not obscured

by the group designs and analysis. The preclinical studies (e.g., Corah on relaxation and distraction,<sup>8</sup> Clark and Hirschman<sup>12</sup> on breathing) are difficult to interpret and generalize from. These use college student populations not representative of fearful patients and present little information about them. In fact, the majority of behavioral intervention studies treating dental fear do not appear to be based on broad observation of clinical populations. Nonetheless, the studies taken together provide a starting point for examining the merits of behavioral therapies in the management of dental fear.

My fundamental question to behavioral researchers is "To whom do you provide what behavioral intervention?" As a dental clinician having seen 300-400 patients with fear-related complaints, I observe that existing research has not provided the answer. The care of patients proceeds from careful observation and collection of data to diagnosis and appropriate therapy chosen from a menu of alternatives. The diagnoses to be reached are specific, not general, and the therapies are targeted and efficient. To know that the patient is fearful is not sufficient. Thus, questions to be discussed in this paper are: What information should be collected to reach a diagnosis? And, having reached a diagnosis how do you choose a treatment?

### **Data Collection and Diagnosis**

Little diagnostic instrumentation has been published that has been well investigated. Diagnostic instrumentation might reasonably include a statement of the current problem, a medical, dental, and social history, physiological and psychological test results, and clinical examination findings.

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## Existing Measures

Studies most often use one of their dependent measures to select subjects. As noted by Ayer and Corah<sup>7</sup> in their recent review, the only consistent practice across studies is to include the Dental Anxiety Scale (DAS). This measure was never intended as a diagnostic tool, although it provides some limited diagnostic information on self-reported anticipation.<sup>15</sup> It specifically mentions waiting in the dentist's office, waiting for drilling, and waiting for teeth cleaning. Many elements of the feared situation are not included, and many of the dental fear studies that use the instrument do not report DAS levels. This measure appears to have some utility as a screening instrument; as a diagnostic tool in the specialized care of fearful persons, the measure lacks detail.

A second measure, the Dental Fear Survey, has been extensively studied although not widely adopted. Its 20 items measure three constructs which have somewhat greater clinical utility:<sup>16</sup> avoidance behavior and anticipation; fears related to specific stimuli and procedures; and felt physiological responses experienced during treatment. The first asks the patient if he puts off appointments or tends to cancel. The second construct consists of separate scales for appointment making, approaching the office, and waiting, and specific procedures such as the sight or noise of the drill. The final factor isolates muscular tension, breathing, perspiration, nausea, and heart rate in separate scales.

A third measure is the Dental Beliefs Survey.<sup>17</sup> Developed in our clinic, its content may be diagnostically important. This 15-item survey, stemming from the work of Gale,<sup>18</sup> assesses the patient's experiences in the interpersonal domain. Its four areas of concern are communication, belittlement, lack of control, and trust. The Geer Fear Survey<sup>19</sup> and various personality measures<sup>10</sup> are mentioned in the literature as dependent measures but have not been thoroughly evaluated for diagnostic usefulness.

A study by Wroblewski and colleagues<sup>13</sup> used a behavioral avoidance test to select high fear subjects for their study. Such tests often distinguish better designed studies of other phobias.<sup>20</sup> In this case, the items in the test were being willing to watch the dentist at work, allow an examination, and make an appointment. Unfortunately, the study results themselves raise questions about the validity of the measure; and from a clinical point of view, the measure provides relatively little diagnostic potential in its present form.

Physiologic measurement of heart rate, galvanic skin response, and respiration has been used extensively in many of the studies I have cited. In six representative studies, none share the same measures and only two used more than one measure.<sup>5,10-14</sup> As dependent measures, these tests appear unreliable. As diagnostic measures, their utility is unknown.

In summary, the measures used in the intervention studies conducted in dentistry thus far appear to provide useful information regarding specific stimuli, interpersonal aspects of care, and appointment keeping and anticipation. Nonetheless, no studies have incorporated these measures consistently and their diagnostic value is limited.

## History of Problem

Most of the studies cited do not report important historical information. Examples are histories of drug and alcohol use. Patients with drug use histories are much more difficult to treat pain free.<sup>21</sup> Other information includes length of avoidance and previous attempts (successful or unsuccessful) to overcome dental fear or other fears. In my own clinical experience, the longer the period of avoidance, the easier the patient is to treat. Similarly, patients who have overcome other fears (e.g., flying) often have skills they can readily bring to bear on the dental situation and should be encouraged to use them.

Another historical variable is patient preference for behavioral versus drug treatments. For example, patients who have used drug-free natural childbirth methods may have the expectancy that behavioral methods are superior and have developed a successful strategy for controlling pain. They are likely to prefer behavioral therapy as opposed to drugs. On the other hand, others have experience with and the expectancy of, positive results from drugs. Often these patients self-medicate. Failure to recognize these individual differences has markedly reduced the usefulness of existing studies. Dropouts and their preferences are extremely important.

Another factor of diagnostic importance is the nature of their current dental problem. Little has been written about symptomatic patients,<sup>22</sup> many of whom are very fearful. Existing studies are almost exclusively on asymptomatic patients. No guidance is provided on applicability of behavioral techniques even though fearful patients are often motivated by pain to come into our clinics.

Two separate clinical reports, by ourselves<sup>1</sup> and a Swedish team,<sup>23</sup> have suggested that patients with other emotional problems have a poorer prognosis. We do not know if this is because their fear problems are different, because other problems interfere with treatment compliance, or because our diagnostic schemes are not precise in choosing the correct treatment for them. Thus, there are many gaps and much research needs to be done in the diagnostic area.

It follows that studies of some of the instruments described so far could have led to more refined and accurate diagnostic categories. In fact, failure to use them as such has resulted in less information from these studies than could have been anticipated. To make an analogy: in the study of periodontal disease, careful clinical observation led to the characterization

of clinically meaningful subgroups and different therapeutic approaches for the subgroups are now evolving. That is not to say that the immunopathology or microbiology of these conditions are fully understood, but rather that the discovery of the subgroups has led to more targeted research.

### Choosing an Appropriate Treatment

The studies in the literature include specific psychological techniques as well as controlled exposure among the interventions. From a clinician's viewpoint, controlled exposure therapy appears very successful,<sup>20</sup> but its effectiveness may be enhanced by the use of specific behavior or drug therapies.

A significant number of patients are afraid of pain associated with specific stimuli. Controlled exposure with a simple and credible cognitive strategy such as distraction is the fundamental treatment.<sup>24,25</sup> Often the distractor will be paced breathing although other distractors such as audiotapes of relaxation instructions, music, or stories may work if the patient participates in choosing them and they are sufficiently engaging. One weakness in the distraction studies in the dental literature is that they have not been conducted with a clinical population and the patient did not choose the distractor.<sup>26</sup> Pharmacological approaches such as nitrous oxide may aid distraction when carefully introduced.<sup>27</sup> Explanation and information are also helpful in preparing patients for invasive medical procedures.<sup>28</sup>

Often fearful patients are distrustful and angry. There is surprisingly little in the dental fear literature about this, although it is acknowledged that expectancy is important in the success of behavior therapy.<sup>29</sup> Exposure therapy with enhanced and purposeful patient control appears most effective. Control is important because it promotes mastery and a sense of self-efficacy.<sup>30</sup> There have been several studies of the control concept in dentistry and they have been uniformly disappointing. This may be because control was conceived of as a personality trait<sup>10</sup> or because of the way in which control was operationalized.<sup>11</sup> In the latter study, Corah and colleagues<sup>11</sup> used a signal mechanism during treatment as a way of enhancing perceived control. However, they report no measure of whether the patient felt he or she had more control; and in fact, report few patients actually used the signal. This is, in part, probably a result of the choice of subjects (i.e., not sufficiently distrustful); but more importantly, it is too limiting a view of control. In our own clinical observations, the patients in this category don't believe the dentist will respond to the signal, thus we find it more useful and effective to center control on pretreatment decision making and priority setting. During dental treatment, careful explanation and information, watching with a mirror, and questioning for feeling are useful.

A rather large number of patients appear to have other anxiety-related disorders: anticipatory anxiety

is common as is difficulty in coping in many situations. Before treatment visits they report a poor night's sleep, nausea or diarrhea, or avoidance behaviors. After a treatment visit, compliance with drug regimens is a problem as is nonfunctional worrying about symptoms such as postoperative pain, bleeding, or swelling.

For these patients behavior modification and shaping are useful.<sup>31</sup> Cognitive strategies have been shown to help such patients compartmentalize problems and focus on active coping.<sup>32</sup> Reinforcement has been shown to be important as these patients have little self confidence or feelings of mastery.<sup>33</sup> As these individuals are often highly suggestible, hypnosis, emotive therapy, and distraction have been found to be helpful.<sup>34</sup> Careful exposure to dental treatment is important in that the earliest procedures should end in success. Failure to control the dental environment will inevitably undo the positive value of the behavioral or drug therapy and result in reduced self-efficacy.

Postoperative problems of this group are the most extreme of all fear patients. The literature suggests that patients need to be given coping strategies to deal with the physical sensations of recovery and positive suggestions for comfort.<sup>35</sup> Work by Dionne and colleagues<sup>36</sup> on postoperative pain control with long-acting anesthetics and nonsteroidal anti-inflammatory analgesics has been very useful to us in controlling sensation. We have supplemented pharmacological and cognitive suggestions with carefully developed patient brochures describing in detail normal and abnormal sensations and what to do about them. Also, we do a lot of posttreatment phone calls to this group to assess and aid coping.

A small number of patients are afraid of catastrophe. They may, for example, fear dying of an anesthetic reaction. Behavioral, cognitive, and physiological reports may be out of synchrony.<sup>37</sup> They may deny fear of the dentist and attribute past experiences to the drug. As Wolpe<sup>38</sup> suggests, the presentation of various elements of a fear hierarchy in imagination can be diagnostic. Biofeedback devices such as heart rate monitors or EMG are useful clinically for assessing this patient. This feedback sets the stage for changing patient cognitions. We have found classical desensitization including relaxation helpful in getting the patient to approach the feared procedure, although in vivo procedures are still necessary to complete treatment. Interestingly there has been little research on these types of problems although we estimate their occurrence to be higher than reported.<sup>39</sup>

### Outcomes

There are no studies of the epidemiology of dental phobia which shed light on their natural history. However, we know from the work on other phobias that the conditions are not static and that spontaneous

remission does occur.<sup>40</sup> Similarly, exposure alone to the fear situation may bring about a reduction in symptoms.<sup>20</sup> Thus, careful outcome studies are necessary in dentistry if we are to ascribe patient improvement to the behavioral therapies or drug we are evaluating.

Furthermore, results can be discordant.<sup>37</sup> That is, cognitive, behavioral and physiological measures may not respond in the same way to treatment. Most often treatments in dental fear research are reported to produce changes in the Dental Anxiety Scale or Dental Fear Survey. There are rarely changes in behavior or physiology. Although this stems in part from difficulties in the reliability of the measures, it is more likely a research design problem. The subjects in most studies are so heterogeneous that the unexplained variance swamps any meaningful result. Also, rarely are subjects studied long enough to assess outcomes.

There are a number of measures that we use clinically that could be used in long-term research. Avoidance behaviors have been used in some studies<sup>9,13,23</sup> and provide data on whether the patients come in for treatment or show up for recall. However, relapse may be a problem and therapeutic research should include relapse prevention. Self report is valuable: patients who say they are getting better usually are. These types of obvious measures are often not included in intervention studies. In the dental chair behavior and physiology are useful during treatment and may be predictive of success in some patients. However, work with agoraphobics has demonstrated vividly that patients can master a behavioral avoidance test and still have nonfunctional cognitions, resulting in frequent and dramatic relapse.<sup>41</sup> Thus, research needs to be done to arrive at appropriate outcome measures.

On the content side, controlled exposure alone is clearly effective in some cases but probably not sufficient in many others. Adjuncts to exposure need to be delineated and their effectiveness assessed. The role of pain and its relationship to anxiety in the fearful patient needs to be included.<sup>42</sup> Moreover, the context—such as the doctor-patient relationship—needs to be understood in this research.<sup>43</sup> Most important, there is virtually no long-term follow-up of therapeutic interventions. Of eight studies cited by Ayer and Corah,<sup>7</sup> only one included follow-up. Relapse is a problem in phobia treatments.<sup>44</sup>

### Conclusion

Clinicians tend to use the kitchen sink approach in treating patients. That is, use enough different approaches to insure success. Unfortunately, much of our research has an element of the same strategy. Various confounded therapies have been evaluated on poorly differentiated subject populations often with clinically nonsignificant results. We have made a lot of progress, but much work remains.

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## Qualitative and Quantitative Effects of Treatment for Dental Fear and Avoidance

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### Summary

In a Swedish community-based program for the treatment of dental phobic patients, a clinical trial was performed among 99 severely phobic individuals with long-standing avoidance of dental treatment. The modes of treatment compared were dentistry under general anesthesia and a broad-based psychophysiological therapy both followed by conventional dental treatment. Psychometric as well as overt behavioral measures were used to elucidate initial state and changes in patients' dental fear and behaviors. Quantitative and qualitative data are presented of initial and long-term (two years) treatment effects. The results indicate a significantly better effect for the psychophysiological therapy.

### Introduction

Although a number of behavioral techniques are available for the treatment of dental fear, sedation and general anesthesia are still major modalities of providing dental treatment to phobic patients. The reasons for the slow entry of behavioral methodology

are probably very complex and may reflect scepticism as to the value of behavioral treatment of severe dental phobia and avoidance behavior. Harrison and Carlsson<sup>1</sup> have noted the high number of studies completed with volunteers or relatively ordinary patients, and the few studies performed with genuine phobic groups. Klepac and co-workers<sup>2</sup> concluded that differently defined study samples make interpretations and comparisons ambiguous. They stated that patients with long-standing avoidance behavior in addition to dental fear probably approximate

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