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Comparison of Curriculum Content on Behavioral Strategies for Managing Anxious Clients in Associate and Baccalaureate Degree Dental Hygiene Programs in the United States

Darnyl Marie King
Old Dominion University

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COMPARISON OF CURRICULUM CONTENT ON BEHAVIORAL STRATEGIES FOR MANAGING ANXIOUS CLIENTS IN ASSOCIATE AND BACCALAUREATE DEGREE DENTAL HYGIENE PROGRAMS IN THE UNITED STATES

by

DARNYL MARIE KING
Associate of Science in Dental Hygiene, 1982, New Hampshire Technical Institute
Bachelor of Arts in Humanities and Social Sciences, 1993, University of Massachusetts-Dartmouth

A Thesis Submitted to the Faculty of Old Dominion University in Partial Fulfillment of the Requirements for the Degree of

MASTER OF SCIENCE DENTAL HYGIENE
OLD DOMINION UNIVERSITY August 1996

Approved by:

Michele L. Darby (Director)
Susan L. Tolle-Watts (Member)
Deanne Shuman (Member)
ABSTRACT

COMPARISON OF CURRICULUM CONTENT ON BEHAVIORAL STRATEGIES FOR MANAGING ANXIOUS CLIENTS IN ASSOCIATE AND BACCALAUREATE DEGREE DENTAL HYGIENE PROGRAMS IN THE UNITED STATES

Darnyl M. King
Old Dominion University, 1996
Director: Professor Michele L. Darby

Dental anxiety, a pervasive problem in the general population, is an important client management concern for dental hygienists. This study sought to determine the type and amount of instruction in United States dental hygiene programs in terms of behavioral strategies for the management of anxious clients, the difference in instruction between associate and baccalaureate degree dental hygiene programs, and the opinions of dental hygiene educators regarding these strategies. A self-designed, 19-item questionnaire entitled the King Behavioral Management Questionnaire was used to obtain data on a sample of 210 accredited dental hygiene programs. Part one of the questionnaire consisted of questions pertaining to behavioral instruction; part two consisted of statements about behavioral strategies that allowed respondents to express their opinions using a Likert scale. Results revealed that 86 percent of programs surveyed (n=146) teach behavioral strategies for managing client anxiety. Types of strategies taught and percentage of programs teaching them were informational provision (96%), distraction (51%), modeling (51%), relaxation (62%) and hypnosis (7%). Chi-square analyses revealed no significant relationships between associate and baccalaureate programs relating to the type of behavioral strategies taught. The Z hypothesis test revealed that baccalaureate degree programs spend significantly more time on teaching behavioral strategies for managing client anxiety than associate degree programs. Frequency
tabulations reveal that the majority of dental hygiene educators have positive opinions regarding the use of behavioral strategies for managing client anxiety during dental hygiene care. However, only 28 percent of faculty have received instruction in this area. Results suggest that comprehensive instruction on behavioral strategies for managing client anxiety is not afforded to students in all dental hygiene programs, even though dental hygiene educators consider these strategies effective during oral healthcare.
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Dental anxiety is a pervasive problem in the general population. Fear of dental treatment ranks fourth behind heights, storms and snakes among the most feared aspects of American life (Agras, Sylvester & Oliveau, 1969). For this reason, numerous studies have been conducted analyzing the etiology, assessment, and management of dental anxiety. However, most research has focused on the use of pharmacological interventions rather than behavioral strategies for mitigating anxiety in clients undergoing oral healthcare (Foreman, 1988). Even though evidence suggests that behavioral strategies have been effective in managing anxious clients in the oral healthcare practice setting (Corah, 1990), these strategies have been used less often than pharmacological interventions by dentists and dental hygienists during client care (Krochak & Rubin, 1993).

Clients have reported that oral health services performed by dental hygienists provoke anxiety (De Jongh & Stouthard, 1993). These clients have stated that the anxiety experienced was equal to or more anxiety producing than restorative work performed by a dentist. Because of this anxiety toward dental hygiene care and the restrictiveness of most dental hygiene practice acts which prohibit the administration of pharmacological agents by dental hygienists, behavioral strategies for anxiety control in clients is suited ideally for utilization by dental hygienists. Furthermore, since dental hygienists are often the first practitioners to treat a client, they are in an ideal position to introduce anxiety reducing
strategies. If clients have been successful in achieving a relaxed state while undergoing dental hygiene care, they may be better able to control their anxiety, thus increasing the likelihood that they will return for continued care.

Current accreditation standards and guidelines for dental hygiene curricula fail to include requirements or recommendations in the area of behavioral management of client anxiety. For example, the Accreditation Standards for Dental Hygiene Education Programs are written broadly and do not specify requirements for instruction in managing client anxiety (American Dental Association Commission on Dental Accreditation, 1992). The American Association of Dental Schools' Compendium of Curriculum Guidelines for Dental Hygiene Education (1994) does not address this area either. Therefore, behavioral strategies for managing the anxious client may be omitted in some dental hygiene curricula. The purpose of this study was to survey United States dental hygiene programs to determine curricular content and amount of instruction in terms of behavioral strategies for the management of anxious clients, the instructional differences between associate and baccalaureate degree dental hygiene programs, and the opinions of dental hygiene educators regarding these strategies. Results may be used in formulating recommendations for instruction in behavioral management of anxious clients, thereby, assisting dental hygiene educators in making effective decisions regarding future curricula in this area.

Statement of the Problem

The purpose of this investigation was to answer the following research questions:

1. Are behavioral strategies for managing anxious clients included in dental hygiene
curricula in the United States?

2. Is there a relationship between associate and baccalaureate degree dental hygiene curricula in terms of the behavioral strategies taught for the management of anxious clients?

3. What are the opinions of dental hygiene educators concerning the use and effectiveness of behavioral management for anxious dental hygiene clients?

4. Is there a difference between associate and baccalaureate degree dental hygiene programs in terms of the hours of instruction devoted to behavioral management for anxious clients?

Hypothesis

The following null hypothesis was tested at the .05 level of significance:

There is no statistically significant difference between associate and baccalaureate degree dental hygiene programs in terms of the hours of instruction devoted to behavioral management for anxious clients.

Significance of the Problem

Dental anxiety is a major barrier to regular oral healthcare for a significant portion of the public. Conservatively, 12 million Americans, or 5 to 6 percent of the population, avoid dental care because of fear, while as many as 40 million people who receive care exhibit some form of anxiety before, during, and/or after dental care (Ayer, 1983). Individuals with high levels of dental fear do not seek preventive care; they seek care most often for immediate pain relief, such as extractions, endodontic treatment, and other emergency interventions (Milgrom & Weinstein, 1993). When emergency or walk-in care
is provided, poor pain control often may be the norm (Milgrom & Weinstein, 1993). Therefore, a person's oral problems, unchecked by preventive services, frequently lead to emergency treatment that is invasive, painful, and costly (Weinstein, 1990). Subsequently, heightened fear and avoidance result in a negative cyclical pattern being developed which corresponds to a large segment of the population with poor oral health (Weinstein, 1990).

Dental anxiety is cited as one of the oral health team's most troubling client management problems (Corah, O'Shea & Ayer, 1985). Anxious clients often cancel or fail appointments (Milgrom, Fiset, Melnick & Weinstein, 1988). When they do come for treatment, they may exhibit poor cooperation; therefore, services for these clients may take more time to perform than for non-anxious clients (Filewich, Jackson & Shore, 1983). The consequence of client anxiety is an increase in stress and a decrease in productivity for the oral health team (Corah, 1990). This anxiety, manifested in clients exhibiting problem behaviors, can affect the technical and interpersonal quality of care (Corah, O'Shea & Skeels, 1982). Most importantly, successful management of client anxiety is likely to determine whether an individual will continue to return for professional care (Corah et al., 1982).

Numerous studies have been published on the management of client anxiety. The majority of studies emphasize pharmacological interventions rather than behavioral strategies for mitigating pain and anxiety in the dental office (Foreman, 1988). Similarly, the tendency in dentistry to overutilize pharmacological agents can be traced to training based on a medical model and the interpretation of pain within the somatic dimension (Pawlicki, 1991). Since dental hygiene education and practice is often influenced by
organized dentistry and behaviors practiced by dentists, dental hygienists may be
overdependent upon pharmacological agents for client anxiety control as well. If so,
dental hygienists may be deficient in the knowledge and skills needed for the practical
application of behavioral strategies for client anxiety. Oral healthcare practitioners,
lacking knowledge and experience in managing anxious clients, often are unsympathetic
and perceive fearful patients as merely difficult or unreasonably seeking attention (Mazey
& Mito, 1993). If clients sense negative feelings from a clinician, they may be inclined to
seek dental treatment in another practice perceived as being more receptive to their needs.

Since many dental schools lack departments of behavioral science, emphasis may
be lacking in this area of dental education (Lange, Dunning & Lewis, 1993). During a
survey of behavioral science instruction in the dental curricula, Lange et al. discovered that
in a sample of dental educators, those reporting being most familiar with behavioral
science, were unsure of the content or skills taught or the person responsible for teaching
in this area. Furthermore, Pawlicki (1991) noted a lack of behavioral science education in
the dental curriculum in the content area of behavioral psychology. This research revealed
that many faculty believe that behavioral interventions are of lesser importance than
pharmacological interventions in anxiety control and that the utilization of behavioral
strategies is not cost effective. Many oral care practitioners, lacking in formal education
and experience in behavioral strategies, possess neither the skills nor the confidence to
implement these techniques for managing anxious clients in practice (Pawlicki, 1991).

Research reveals that a behavioral approach may be more effective than a purely
pharmacological approach when striving to alleviate dental anxiety (Tay et al., 1993).
Behavioral management strategies take into consideration the psychological component of a client's pain and anxiety which is not a factor in a purely pharmacologic approach (Krochak & Rubin, 1993). Specifically, pharmacological interventions alone do not facilitate a client overcoming the anxiety and fear associated with oral healthcare. To overcome anxiety, psychological and behavioral changes are needed (Krochak & Rubin, 1993). Potential benefits of behavioral strategies could be lessening of client anxiety, decreasing the chance of an unpleasant treatment experience, increasing the compliance of homecare and treatment recommendations, and increasing the likelihood for successful treatment outcomes (Tay et al., 1993).

The use of behavioral approaches lessen the need for conventional, pharmacological therapies which have inherent risks and side effects, and which can negatively impact on both client and practitioner if an adverse reaction would occur (Foreman, 1988). The client and entire oral health team benefit when nonpharmacological interventions are used to manage anxiety. For example, lessening the need for and the use of pharmacological therapies will avoid the risk of toxemia and allergic reactions from local and general anesthesia, oral sedatives, and nitrous oxide. Likewise, these pharmaceuticals have inherent inconveniences and side-effects that can be avoided via behavioral strategies. For example, disadvantages of using oral sedatives are the dulling of client senses, making communication and self-care after treatment difficult. Another common adverse side-effect is the numbness from local anesthetic agents that may take hours to dissipate. During this time, clients may have difficulty talking and could bite their cheek or lip, causing a traumatic lesion. However, local anesthesia, with its proven utility
for pain control, may still be needed for invasive oral procedures. Behavioral therapies used in combination with local anesthesia have been shown to facilitate the acceptance and effectiveness of the anesthesia by lessening the anxiety often associated with these agents (Sokol, Sokol & Sokol, 1985).

The oral healthcare team may benefit in two ways from the application of behavioral strategies for the control of client anxiety. First, the use of alternative therapies is cost effective. Anxious individuals are more difficult to treat and consume more chair time which often decreases productivity (Filewich et al, 1983). From an occupational safety perspective, pharmacological agents pose a health threat to the oral healthcare team. Nitrous oxide exposure among female workers has been linked to a reduction in fertility (Rowland et al., 1992), as well as a higher than expected incidence of spontaneous abortions (Cohen et al., 1980).

Considering the practice act constraints of dental hygienists, behavioral strategies may be applied ideally during the rendering of preventive and therapeutic oral health services. The majority of state practice acts pertaining to dental hygiene prohibit the administration of local anesthesia and nitrous oxide-oxygen analgesia by dental hygienists. Under the direct supervision of a dentist, dental hygienists may administer local anesthesia in 22 states and may administer nitrous oxide-oxygen sedation in 13 states (Access, 1995). By controlling client anxiety without the use of pharmacological agents, dentists may be needed less often to administer or supervise their use during dental hygiene services. Thus, office productivity may be increased because the dentist could invest time in more profitable ways.
De Jongh and Stouthard (1993) reported that treatment performed by a dental hygienist provokes as much anxiety for clients as does treatment performed by a dentist. More than 40 percent of the clients noted that their anxiety level visiting a dental hygienist was equal to their anxiety for visits to the dentist, whereas almost 15 percent reported care from a dental hygienist was more frightening. Considering these findings and previous research indicating the pervasiveness of dental anxiety in the general population, dental hygiene treatment may provoke significant anxiety in a large segment of the population. De Jongh and Stouthard (1993) concluded that dental hygienists should be instructed in the use of stress reducing techniques, such as distraction and hypnosis.

Behavioral strategies for managing client anxiety have demonstrated clinical effectiveness and may be ideally utilized by dental hygienists. A survey of the dental hygiene curricula to ascertain the content and amount of instruction related to behavioral strategies for managing client anxiety is important, since the quantity and quality of instruction in this area is unknown. In addition, it is important to determine the opinions of dental hygiene educators concerning behavioral management for client anxiety because educators' opinions and preferences may influence instruction in this area. The dental hygiene professional, educated in managing anxiety, could promote relaxation, facilitate more successful treatment outcomes, and enhance the oral healthcare experience for anxious clients. Dental hygienists trained in behavioral management may attract potential clients to dental treatment settings who are not presently receiving care. Ultimately, the personal rewards could be great by helping clients achieve optimum oral health and overcome a difficult barrier.
Definition of Terms

For the purpose of this study, the following terms are defined:

1. **Anxious clients** - persons cared for in the oral healthcare environment who are fearful and nervous about undergoing dental or dental hygiene care. Some biological indicators of anxiety in clients include: moist palms, sweating, fluttery stomach, fine hand tremors, rapid heartbeat, light-headedness, difficulty in breathing, and hyperventilation (Weiner, 1992). Other verbal and nonverbal signs include: pacing, rubbing of hands, facial expressions, pallor, tightly gripping the operatory chair, muscle tension, talkativeness, monosyllabic responses, or the lack of communication (Weiner, 1992; Millar, Atkinson, Blinkhorn & Kay, 1991).

2. **Associate degree dental hygiene programs** - accredited dental hygiene programs, in institutions of higher education, that award an associate's degree in dental hygiene.

3. **Baccalaureate degree dental hygiene programs** - accredited dental hygiene programs, in institutions of higher education that award a bachelor's degree in dental hygiene.

4. **Behavioral strategies** - techniques developed, using basic principles of learning, to teach clients methods for reducing anxiety and tension. The strategies focus on different response systems or behaviors such as cognitive or self-report, physiological arousal and overt-behavioral indexes (Gatchel, 1992). These strategies include information provision, modeling, distraction, relaxation, and hypnosis.

5. **Curriculum** - the aggregate of courses of study given in a college or university.
The dental hygiene curriculum is the organized body of coursework that provides students with the knowledge and competence required to function successfully as dental hygienists.

6. **Dental hygiene care** - the performance of preventive, therapeutic, and educational services involving the teeth and supporting structures of the oral cavity. Services include: scaling, root debridement, extrinsic stain removal, exposing radiographs, and applying sealants, fluorides, and desensitizing agents.

7. **Distraction** - a procedure which divides the attention or prevents concentration, mitigating client anxiety through preoccupation; i.e., musical programming, videogames, and videotapes.

8. **Hypnosis** - a method of applied imagination, which may be harnessed to alter perception, change behavior, and modulate sensation. Focused attention may be directed to some constructive end.

9. **Information provision** - the provision of procedural and sensory information to clients during oral healthcare.

10. **King Behavioral Management Questionnaire** - a 19-item, curriculum analysis survey designed by the researcher to measure the content and amount of behavioral instruction for the management of anxious clients taught in dental hygiene programs.

11. **Management** - the act and manner of controlling a situation. Management strategies were adapted from behavioral psychology and basic principles of learning.
12. **Modeling** - the act of watching an individual undergo oral healthcare in either a real or simulated environment.

13. **Relaxation** - the process of bringing relief from the effects of tension and anxiety via strategies such as rhythmic breathing, systematic muscle relaxation, and imagery.

**Assumptions**

For the purpose of this study, the following assumptions were made:

1. Behavioral strategies such as information provision, modeling, distraction, relaxation, and hypnosis are clinically effective methods for the control of dental anxiety.

2. Dental hygiene educators, responsible for dental hygiene curricula, are uniquely qualified to express their opinions regarding the value of behavioral strategies to dental hygiene practice and whether such strategies should be in dental hygiene curricula.

3. The questionnaire is an appropriate method for obtaining information about curricula from a large number of dental hygiene programs that represent a diverse geographical area of the United States.

4. The sample of respondents is representative of dental hygiene programs nationwide.

5. The respondents are familiar with behavioral management strategies and know the curricular content and amount of instruction afforded to their students.

6. The respondents would answer the questionnaire honestly and completely.
The results from the study add to the body of knowledge on dental hygiene education and can be used to make recommendations for the enhancement of dental hygiene curricula and practice related to behavioral strategies for management of the anxious client.

**Limitations**

The following limitations are possible threats to the validity and reliability of this study:

1. The self-designed questionnaire had no established validity and reliability. This limitation was minimized by having the questionnaire reviewed by content experts to establish the content validity and by pilot testing the King Behavioral Management Questionnaire using the five dental hygiene programs in Virginia.

2. A minimal response rate from the questionnaire could limit the generalizability of the results to all dental hygiene programs. Therefore, a follow-up letter was sent to all nonrespondents to encourage a satisfactory response rate.

**Methodology**

The purpose of this study was to determine the type and amount of instruction in United States dental hygiene programs in terms of behavioral strategies for the management of anxious clients, the instructional difference between associate and baccalaureate degree dental hygiene programs, and the opinions of dental hygiene educators regarding these strategies. A 19-item, self-designed questionnaire entitled, the King Behavioral Management Questionnaire, was submitted to a panel of dental hygiene experts at Old Dominion University in Norfolk, Virginia and pilot tested using the dental hygiene programs in Virginia to establish content validity. Revisions to the questionnaire
included adding and deleting questions and improving item clarity.

The revised questionnaire booklets were numbered to correspond to individual programs so that nonrespondents could be identified (See Appendix A). These booklets were then sent to the directors of all dental hygiene programs in the United States (n=210), excluding the five dental hygiene programs in Virginia that were used in the pilot study. On page one of the booklet, a letter explained the purpose of the study and assured the respondents of confidentiality. A self-addressed stamped envelope was included with the questionnaire to encourage a high response rate. The investigator's university address was included so that the participants could request a copy of the results of the study. A second questionnaire booklet, including a follow-up letter, was sent to nonrespondents four weeks after the initial mailing (See Appendix B). Data obtained from the questionnaire were analyzed using frequency distributions, percentages, chi-square statistical tests, and the Z hypothesis test.
CHAPTER II

REVIEW OF THE LITERATURE

The management of anxious clients continues to challenge dental hygiene practitioners. To understand this subject area and its implications for dental hygiene curriculum development, the literature was reviewed in the following subtopics: (1) anxiety about dental hygiene care, (2) etiology of dental anxiety, (3) assessment of dental anxiety, (4) behavioral strategies for managing dental anxiety, (5) practitioner opinions toward treating anxious patients, and (6) behavioral management instruction in the curricula.

Anxiety About Dental Hygiene Care

Dental anxiety has been thoroughly investigated in relation to treatment performed by a dentist, but remarkably little is known about anxiety reactions related to treatment performed by dental hygienists (De Jongh & Stouthard, 1993). Professional oral care is delivered not only by dentists, but by dental hygienists, who perform preventive, therapeutic, and educational services aimed at maintaining the integrity of the teeth and their supporting structures. Considering that pain is a factor in patients' anxiety toward oral healthcare, many patients may be anxious about the pain they expect during, and as a result of, scaling and root debridement - pain which in certain cases, can last for several days (De Jongh & Stouthard, 1993).

De Jongh and Stouthard (1993) were the first to investigate the importance of anxiety reactions associated with dental hygiene treatment procedures. In their study, anxiety reactions were measured in 101 patients who were scheduled to see a dental
hygienist; measurements were compared to anxiety reactions of patients who had scheduled appointments with a dentist in the same healthcare facility. Directly after treatment by the dental hygienist, patients were asked to complete two questionnaires. The first assessed their general level of anxiety using the Photo Anxiety Questionnaire (PAQ) (Stouthard, de Jongh & Hoogstraten, 1991). An additional 12-item questionnaire was used to obtain information about specific stimuli and situations that might provoke anxiety during dental hygiene treatment. To determine differences in reactions to dental hygiene treatment and dental treatment, a comparison was made between the mean PAQ score of the dental hygienists' patients and the mean PAQ score of 106 dental patients.

The researchers found that the highest anxiety ratings were given to actual feelings of pain. Almost 78 percent of the patients rated pain during treatment as fairly anxiety provoking. A substantial group (67%) of the patients reported that they become fearful anticipating pain as well. The third most frequently mentioned element was that of anxiety being induced by touching the teeth with dental instruments (49.5%). The sounds made by instruments while touching the teeth were an anxiety producing factor in 36.4 percent of the participants, while the sight of the instruments produced anxiety in 17.4 percent of the subjects. The unpredictability of the situation in 43 percent of the respondents was associated with feelings of anxiety and 35 percent of the subjects reported that lacking a sense of control during treatment was a factor in producing anxiety. A dental hygienist's remarks about poor homecare were rated as frightening by almost one third (32%) of the respondents. Further results indicated that during dental hygiene treatment, more than 40 percent of the patients noted that their level of anxiety was equal to their level of anxiety
during visits to the dentist. Only 15 percent of the patients experienced no feelings of anxiety and another 15 percent reported that a visit to the dental hygienist was more distressing than dental treatment. Limitations of this study that may restrict the generalizability of these findings include the fact that the sample included patients from only one clinic and therefore, do not necessarily represent the population of patients as a whole; second, no attempt was made to control for anxiety level in both treatment groups. Perhaps the sample of dental hygiene patients was more anxious than the sample of dental patients to begin with. However, the researchers concluded that there was still substantial evidence that treatment by a dental hygienist induces a substantial amount of pain and is a distressing event for many individuals. Therefore, they suggest that dental hygienists should be trained in utilizing anxiety reducing techniques, such as distraction and hypnosis.

Etiology of Anxiety in Dental Clients

The etiology of dental anxiety has been explored by investigating factors which differentiate individuals with dental anxieties and phobias from those without such fears (Davey, 1989). Davey's research sought to determine factors that cause individuals to change their attitudes about dental treatment from anxious to relaxed or from relaxed to anxious.

Thirty-nine male and 62 female students at an urban university, who reported having made at least one visit to a dentist for treatment in their lifetime, participated in the study. The subjects were given a self-designed questionnaire consisting of 23 questions about dental experiences including attitudes about dental care. Subjects were divided into four groups depending on how their attitude toward dental treatment had changed during
their lifetime. Group A were subjects who reported always having been anxious about
dental treatment; Group A-R contained subjects who were once anxious but now reported
feeling relaxed about dental treatment; Group R-A contained subjects who were once
relaxed but were now anxious about dental treatment; Group R contained subjects who
reported never having been anxious about dental treatment. This categorization facilitated
identification of factors which might have prevented subjects who had traumatic
experiences from acquiring dental anxieties and might have led to changes in attitude
either from being anxious to relaxed or vice versa.

Results revealed that the number of subjects who reported having had at least one
dental experience that was painful or traumatic was significantly lower in Group R (60%)
than in all other groups. Similarly, the number of subjects reporting having had two or
more painful experiences was significantly higher in Group A than in all other groups.
Both Groups A and R-A reported being more likely to put off or avoid the dentist than
Groups R and A-R. Additionally, when subjects were asked whether they felt they were
either good or bad at enduring pain, more subjects who started their dental treatment
history feeling relaxed (Groups R and R-A) reported having more pain tolerance than
subjects who started their dental treatment history feeling anxious (Groups A and A-R).

Davey (1989) concluded that dental anxieties and phobias are acquired and
modulated via processes predicted by contemporary conditioning theory. Subjects who
reported never having had anxieties about dental treatment were less likely to have had a
painful dental treatment than subjects who did report an anxiety. In addition, subjects
whose dental anxiety did not remit reported significantly more painful and traumatic dental
experiences than subjects whose anxiety did remit. A limitation of this study is that the self-designed questionnaire had no established reliability or validity.

A study by Milgrom, Vignehsa, and Weinstein (1992) examined the prevalence and etiology of dental fear in a large sample of Singapore adolescents. Specifically, the researchers tried to ascertain if children who reported painful treatment and lack of control during their dental visits were likely to report high fear or to return to the same dental office. All of the 1564 children in six Singapore secondary schools completed questionnaires regarding fear of the dentist, dental beliefs and their most recent dental visit. The survey instruments used were the Dental Fear Survey (DFS) (Kleinknecht, Klepac & Alexander, 1973) and the Dental Beliefs Survey (DBS) (Smith, Getz, Milgrom & Weinstein, 1987). Additionally, the children were asked demographic and dental utilization questions, and 10 items specifically about fear and control at the last dental visit.

The researchers reported the prevalence of dental fear as 115 fearful children per 1,000 people. Of the 1564 children, 179 reported being hurt at the last visit, 148 reported the dentist as the source of pain, 23 reported that the dental nurse was the source of pain, and 8 reported that other personnel were the source of pain. Seventy children indicated that the dentist or other personnel did not stop and correct the painful situation when it was expressed. About 40 percent reported that some, almost all or all procedural/sensory information about the appointment was explained to them beforehand, 14.1 percent reported that little about the appointment was explained to them beforehand, and 41.9 percent reported that nothing was explained. Ten percent of the children reported that
something unexpected occurred during the appointment. Twenty-two percent felt that the
dentist was in a hurry some or all of the visit time.

A higher proportion of children who had visited the dentist in the last year reported
low dental fear (9.8%) as compared with those who had received care in the last one to
two years (20.0%) or longer (15.4%). Children who identified a family dentist were 1.6
times less likely to be fearful than children who did not identify a family dentist. As would
be expected, the type of treatment received is related to the fear expressed. Children who
had invasive treatment (restorative and oral surgery, relief of pain) were 1.6 times more
likely to report high fear than children who had diagnostic/preventive or orthodontic
procedures. Similarly, children who reported pain at the last visit were more than five
times as likely to report fear as children who experienced no pain. When asked if whether
or not they would be willing to return to the same dental provider at their next dental visit,
261 (16.7%) indicated 'no', 604 (38.6%) indicate 'not sure', and 698 (44.6%) indicated
'yes'. Children who had reported painful treatment were 13.7 times more likely to report
high fear and 15.9 times less likely to be willing to return to the dentist or dental nurse.
The researchers concluded that the etiology of severe dental fear appears to be strongly
related to a direct conditioned response in the presence of pain and vulnerability.

Although no single causative factor has been identified for the incidence of dental
anxiety, clearly one factor is under control of dental professionals. Moline (1991) refers
to this factor as iatrogenic odontophobia or dentist instigated fear. For the past 35 years,
Moline has conducted research with patients exhibiting dental phobias. Using the
interview technique, his findings reveal that the single most common cause of dental
anxiety or phobias can be traced to dentist-induced trauma from past dental visits. Furthermore, studies suggest that at least some, if not a majority, of dental phobics developed their problem as a result of dental care received as a child (Klesges & Malott, 1984). Interviews with persons who have "iatrogenic odontophobia" produce relevant information about some members of the dental profession and their actions toward their patients, or the way that their actions are perceived by their patients. Common client complaints center on pain, the production of pain, and fear of the unknown. Statements from persons who report anxiety say that the dentist was rough, unpleasant, unkind, hurtful, abusive or frightened them. Children who have been mistreated during a dental visit may reach adulthood with significant anxiety regarding dental care (Klesges & Malott, 1984). If this person becomes a parent, this anxiety and fear is often transmitted to their own children and a new generation develops a fear of oral care even before their first visit (Klesges & Malott, 1984). Moline concluded that iatrogenic odontophobia is an area where the dental professional can exercise control and is one that can be directly influenced by dental educators.

Dental phobias also are learned from other sources, such as the media. Negative portrayal of dentistry in movies, on television, and in print may add to an individual's anxieties (Krochak & Rubin, 1993).

Assessment of Anxiety in Dental Clients

The identification and assessment of anxiety can be a difficult process. This difficulty may explain why many dental practitioners, aware of dental anxiety and its potential impact on their practices, admit to a lack of confidence in their ability to identify
and assess the condition (Weiner, 1992).

Weiner believes that body language often gives clues to the presence and level of dental anxiety. Patient behaviors such as not sitting completely in the operatory chair, having their feet hanging off, or fidgeting and moving around, oftentimes indicate anxiety and readiness to leave. Respiration and perspiration rates, chair gripping, and talkativeness also serve as indicators of anxiety (Weiner, 1992; Millar et al., 1991).

A comprehensive, dental history addressing previous dental experiences may give an indication of the level of comfort or anxiety a client experiences in the dental environment (Gadbury-Amyot, 1995). To evaluate client anxiety, a number of instruments have been reported in the literature. The survey most often cited to measure dental anxiety is the Corah Dental Anxiety Scale (DAS) (Corah, 1969). The original version of the DAS was formulated for adults; a modified version of the scale has been designed for use with children. Considered to be a valid and reliable instrument which has stability over time (Corah, Gale & Illig, 1978), the DAS consists of four multiple-choice questions related to before dental treatment scenarios. Points are assigned depending on the response, with one point for an (a) choice, the least anxious, to five points for an (e) choice, the most anxious. The person's cumulative DAS score can range from 4 (no anxiety) to 20 (high anxiety) and represents anticipatory anxiety, i.e., perceived anxiety before treatment has commenced.

A modification of the DAS was completed by Ronis (1994) who recognized that the instrument had become dated because of changes in dental practice and language since 1969. Ronis updated the scale to use gender-neutral wording and to acknowledge that
Dental hygienists as well as dentists perform the prophylaxis. In item one of the original DAS, clients were asked that if you had to go to the dentist tomorrow, how would you feel about it. Pilot subjects had indicated that the level of their anxiety would depend on the reason for their visit. Thus, three versions of the DAS, called the Dental Anxiety Scale-Revised (DAS-R), were formulated; each version specified the reason for the dental visit: a check-up, a toothache, or both reasons.

To assess the reliability and validity, and develop norms for the instrument, the DAS-R was used in 50 minute, face-to-face interviews with 662 dentate adults living in the Detroit, Michigan area. The respondents were interviewed in their homes by Survey Research Center staff in August through November 1989. Reliability (Cronbach's alpha) was acceptable for all three versions of the scale, with the toothache version (alpha = .78) slightly less reliable than the other versions (alpha = .82). Validity was examined by correlating the revised scale with the following two predictions that have been supported in previous studies. First, there should be a positive correlation between dental anxiety and dental problems. Second, there should be a negative correlation between anxiety and frequency of checkups. Both of these predictions were supported for all three versions of the dental anxiety scale. Ronis (1994) concluded that the DAS-R is a reliable and valid instrument and should be used in research and in clinical practice to identify patients with high dental anxiety.

A study to determine the equivalency of the DAS and the DAS-R was conducted by Ronis, Hansen, and Antonakos (1995). A questionnaire including both versions of the DAS, with an additional 100 questions about oral healthcare and attitudes toward oral
healthcare providers, was completed by 141 undergraduate students at Oakland University in southeast Michigan. Psychometric equivalence of the DAS and DAS-R was examined by comparing the means, variances, and reliabilities (alphas) of the two scales and by correlating the two scales with each other. Results revealed that the two scales correlated almost perfectly with each other and had similar means, variances, and reliabilities.

A limitation of this study was the use of a nonprobability sample of college students at a single university. It is unknown whether the results are generalizable to other samples. To the extent that these results are generalizable, the researchers suggest the use of the DAS-R to measure dental anxiety because this instrument avoids gender-specific terminology and recognizes the role of dental hygienists.

Although the DAS-R incorporates a more contemporary view of oral healthcare practice, it does not assess dental hygiene fear specifically. A fear survey specific to dental hygiene would be helpful in the management of anxious clients. Identification of fear subtypes experienced by the client undergoing treatment by a dental hygienist would be helpful in implementing behavioral management strategies that are specific to those fears (Gadbury-Amyot, Overman, Carter-Hanson & Mayberry, 1996).

An investigation of dental hygiene treatment fear was conducted by Gadbury-Amyot, Overman, Carter-Hanson and Mayberry (1996) in an attempt to devise and test a dental hygiene fear survey. A self-designed, 16-item instrument was developed, called the Dental Hygiene Fear Survey, that incorporated the University of Washington Fears Clinic four subtypes of dental fear: fear of specific stimuli, generalized anxiety, distrust, and catastrophe. The survey was administered to a convenience sample of 300 dental hygiene
patients from a Midwestern metropolitan area prior to dental hygiene treatment. If patients' scores were greater than one standard deviation above the mean, they were classified as experiencing dental hygiene fear. Reliability was estimated by Cronbach's alpha; validity was examined by correlating the revised instrument with measures of conceptually related variables.

Results for Cronbach's alpha coefficient was .85 for specific stimuli, .79 for generalized anxiety, .75 for distrust, and .68 for fear of catastrophe while receiving dental hygiene treatment. Overall reliability was estimated at .92. A significant positive correlation (.58) was found between dental hygiene patients who reported high fear and avoidance of dental hygiene treatment. Dental hygiene fear correlated negatively with age, with females reporting dental hygiene fear more frequently than males. The researchers concluded that the Dental Hygiene Fear Survey shows promise for the evaluation of dental hygiene fear; however, further revisions and studies of the survey are needed to increase its overall reliability and validity.

**Behavioral Strategies for the Control of Anxiety**

Behavioral interventions to control anxiety have received considerable attention in dentistry (Giangrego, 1986). Given the interactive nature of pain and anxiety and the occurrence of anxiety in the dental operatory, it is evident that behavioral management is needed. Nonpharmacological methods have been recognized by the American Dental Association Council on Dental Education (1989) as a necessary component of pain and anxiety management. However, behavioral techniques are not meant to replace anesthetics and other pharmacological interventions, but rather to supplement them and
reduce the need for excessive and potentially unsafe use of medication. An integration of good behavioral management techniques may lead to lessened drug requirements, greater patient safety, and reduced drug side effects (Foreman, 1988). The behavioral strategies of information provision, modeling, distraction, relaxation, and hypnosis are discussed further since these strategies are applicable during dental hygiene treatment.

**Provision of Information**

The provision of information is an important first step in preparing patients and helping them adapt to the stressfulness of oral care. Siegel and Peterson (1980) compared the effectiveness of teaching specific coping skills or providing sensory information about the dental experience, in reducing stress in preschool-aged children. Forty-two children were assigned to one of three interventions: self-control coping skills, sensory information, or no treatment involving experimenter contact. In the coping skills group, children were taught general body relaxation, deep and regular breathing, imagery, and the pairing of the relaxing cue words, calm and nice. Children in the sensory information group received a description of basic procedures, typical physical sensations, sights, and sounds that they would experience during the restorative dental session. In the control group, children were read a chapter from *Winnie the Pooh*. Response to dental treatment was measured by behavioral, physiological, and self-report measures during a prophylaxis and a restorative dental session.

Results indicated that children who received either sensory information about the dental experience or coping skills training displayed fewer disruptive behaviors than children in the control group. They also were rated as less anxious and distressed, more
cooperative, and had lower posttreatment pulse rates. The only difference between the two treatment groups occurred just after the intervention and prior to the restorative session when coping skills subjects showed lower pulse rates. This difference suggests that the children used the relaxation techniques that they had learned. Siegel and Peterson (1980) concluded that providing children with coping skills and preparatory sensory and procedural information decreased their anxiety.

**Modeling**

Modeling, watching an individual undergo real or simulated oral healthcare, is a behavioral technique that has been used successfully in preparing children for dental visits (Melamed, Weinstein, Hawes & Katin-Borland, 1975; Klesges & Mallot, 1984). Children learn many behaviors through observation and imitation (Bandura, 1969). Because children learn much of their behavior by observing others, modeling techniques can be applied to reduce children's fear and anxiety of dental treatment (Melamed et al., 1975).

A study was conducted by Melamed et al. (1975) to determine if watching a videotape of a peer undergoing dental treatment successfully, would reduce anxiety-related, disruptive behavior in a group of children. Fourteen inner-city children who were first-time patients at a pedodontic clinic were selected to participate in the study, matched on race, sex, age, and initial scores on a children's fear survey schedule (Scherer & Nakamura, 1968), and assigned to the experimental (film modeling) group or the control (drawing task) group.

A 13-minute videotape portrayed a 4-year old black child coping with his anxiety during a visit for dental restorative procedures. This model patient was rewarded verbally
by the dentist for cooperative behavior and with a gift at the end of the session. In the experimental group the tape was shown to each child individually at the third visit when they were aroused in anticipation of dental restorations. Children in the control group were taken to the same videotape viewing room but were asked to draw pictures for the same time interval. A behavioral profile rating scale, developed by the researchers, was used to provide an objective measure of the behavior of the child in the dental situation. This scale measured the frequency of behaviors that led to a disruption of the treatment procedure.

Analysis of variance revealed no significant differences between groups supporting the assumption that any observed effect was not caused by initial group differences. A repeated-measures analysis of variance on data from the behavior profile rating scale, revealed that children who viewed the videotape exhibited significantly less disruptive behavior during restorative procedures than the children in the control group. Children in the control group showed more than a 120 percent increase in disruptive behavior over their initial levels. Children who viewed the videotape scored significantly higher on cooperating during actual treatment than children in the control group. The results reveal that children's behavior during dental procedures can be improved by the viewing a videotaped child displaying appropriate, cooperative behavior.

Another study by Klesges and Malott (1984) involved a treatment program that combined graded exposure and parental modeling of appropriate behavior to alleviate a child's anxiety towards dental treatment. The child was a dental phobic, crying and shaking violently on the way to the dental office, and refusing to cooperate. The mother
rated the child's behavior using the modified version of the Dental Fear Survey (DFS) (Kleinknecht, Klepac & Alexander, 1973). Eight consecutive sessions involved viewing dental exposure videotapes, exposure to the dental facility, interactions with the dentist to build rapport, and modeling by the mother during a check-up appointment where both mother and child were examined. The mother was instructed to act unafraid as she was gradually exposed to the dental procedures and to model the appropriate behaviors. The dentist performed two amalgam restoration on the child under nitrous oxide-oxygen sedation. Prior to the administration of sedation, the child sat in the chair by herself and at no point did she display any overt signs of anxiety.

Posttest results from the DFS reveal that the child's average score dropped from "very much anxiety" to "a little anxiety." After six-months, more restorative care was performed on the child without incident, indicating that the treatment effects lasted. Keeping in mind the limitations of a single-case design, the results of this study suggest that the combination of exposure and modeling were successful in treating a dental phobic child. Furthermore, the study may implicate the importance of parental behavior on children, demonstrating the need for a careful assessment of both parental and child anxiety which may interfere with effective oral care.

Children observing a peer (either live or symbolic) successfully undergoing dental treatment can be effective in reducing anxiety about dental care. Likewise, modeling can be viewed as a type of information provision. In modeling, knowledge about aspects of the procedure and what one can expect to experience, is derived from individuals undergoing them. Information provision and modeling procedures can be videotaped or
audiotaped so that individuals can view them before treatment.

**Distraction**

Distraction, another cognitive-related procedure, has proved effective in helping clients cope with anxiety during oral healthcare (Corah, 1990). In this method, the client's anxiety is mitigated through preoccupation. Seyrek, Corah, and Pace (1984) compared the use of three distraction techniques for reducing stress in dental patients. The sample consisted of 80 college students, 40 men and 40 women, who required a minimum of two, class II amalgam restorations. At the beginning of the first visit, the subject completed the DAS. Afterwards, a class II amalgam restoration was performed on all clients without using anxiety-reducing interventions. The subjects then returned for a second visit and were assigned randomly to one of four groups. The first group was a control group, with no anxiety-reducing interventions; the second group listened to an audio presentation of a comedy program; the third group watched a video presentation of a comedy program; and the fourth group played a video ping-pong game. A second, class II amalgam restoration was performed on all clients.

Self-rating scales were used at the end of each visit and related to the patient's feelings during dental procedures. Two of the scales were seven-point rating scales: a discomfort scale that ranged from calm, relaxed (1) to tense, upset (7); and a pain scale that ranged from not painful (1) to extremely painful (7). In addition, an eight-item physical feelings scale adapted from the Autonomic Perception Questionnaire (Borovec & O'Brian, 1977) was used. A high score on this scale indicated that the patient experienced autonomic sensations during the dental procedure. Anxiety levels of the subjects were
assessed during treatment by recording of electrodermal responses via electrodes attached to their fingers. All measures obtained were subject to group-by-gender analysis of variance. Low F ratios from this analysis lead to the assumption that the four groups were comparable for the variables investigated before the introduction of the experimental procedures. Results indicated that the video comedy and the video game were nearly equivalent in reducing patient stress, whereas the audio comedy, which demanded the least attention, did not reduce stress significantly better than controls which had no anxiety-reducing interventions. With regard to physiological arousal, both video formats produced increased autonomic activity. Seyrek et al. (1984) concluded that for distraction methods to be successful in decreasing anxiety, they appear to require heightened rather than depressed physiological activity. In other words, the use of distraction seems to arouse the systems of the body, contrary to other forms of behavioral strategies that seem to slow the systems down.

Stark et al. (1989) evaluated the usefulness of distraction with children undergoing dental treatment. Four anxious and disruptive children were shown a poster and told a story about it during treatment. They earned a prize if they were attentive to the poster and could correctly answer questions posed about the story. The children's disruptive behavior was assessed via direct observation, and the results were analyzed using a multiple baseline design. Disruptive behavior was operationalized using the Anxious and Disruptive Behavior Code (Stokes & Kennedy, 1980). Anxious and disruptive behavior decreased upon introduction of the program for all children. However, it was concluded that distraction does not appear to be an optimal intervention strategy for children
undergoing dental treatment. Distraction was found to be effective initially, but the results were not maintained across repeated visits. One might conclude from this study that behavioral techniques that are effective with adults do not necessarily have the same effect with children.

Relaxation

Relaxation has been used as an anxiety reducing technique in dentistry because it is impossible to be relaxed and anxious at the same time (Corah, Gale, Pace, & Seyrek, 1981). Relaxation techniques include: diaphragmatic/rhythmic breathing, paced respiration, Bensonian relaxation response (1975), Wolpe muscle relaxation (1964), and imagery.

Diaphragmatic breathing consists of having the patient take deep, slow breaths in a rhythmic pattern that will innervate the vagus nerve and elicit a parasympathetic response (Krochak & Rubin, 1993). The patients should be instructed to feel the chest and stomach muscles relax as they exhale, and to let this relaxation spread throughout the body.

Paced respiration has been found to decrease client anxiety (Clark & Hirschman, 1980). Clark and Hirschman studied the effects of paced respiration on affective responses during dental stress. The subjects of this study were 50 undergraduate females who had scores above the mean of nine and below 17 on the Corah Dental Anxiety Scale. The dental stimulus was a videotape depicting a class I amalgam restorative procedure consisting of nine 60-second segments which included injection, drilling, and hand instrumentation. Prior to viewing the videotape (dental stimulus), 30 subjects (ten per group) were trained for five minutes to pace their respiration at eight (slow pace), 16
(normal pace), or 24 (fast pace) cycles per minutes by means of a two-light display. They were told to begin smooth and even inhalation in response to the appearance of one of the lights and exhalation in response to the appearance of the other light. Ten additional subjects were trained for five minutes only to track the light display (attention control). The remaining ten subjects were told to relax for five minutes (no training control).

During the videotape (dental stimulus), all subjects rated each segment on a 15 point scale: 1 represented extreme unpleasantness and 15 represented extreme pleasantness. In addition, respiratory rate, heart rate, skin conductance, and galvanic skin responses were monitored.

Mixed analyses of variance and post hoc Newman-Keuls tests revealed that the eight pace group reported less unpleasantness in response to the videotape (dental stimulus) than the 16 pace group, the 24 pace group, the attention control group, and the no training control group. Likewise, the eight pace group exhibited a slower respiration rate than the other groups. Analyses of mean skin conductance, mean heart rate, and mean frequency of galvanic skin responses failed to reveal any differences among the groups. Also, it should be noted that there were no pre-experimental group differences for these measures during a five-minute baseline period.

Clark and Hirschman found that the decrease in self-reported unpleasantness for the eight pace group was not due to a visceral change, since this group did not exhibit a decrease in heart rate nor a decrease in electrodermal activity. These findings are consistent with the Corah (1969) hypothesis that dental stress may be more a function of cognitive evaluations than of increased visceral activity. The researchers speculated that
the subjects expected to perceive and actually perceived less dental stress due to the belief that a relationship exists between slower-paced respiration and relaxation. Clark and Hirschman concluded that slow-paced respiration was associated with a decrease in perceived dental stress.

The Bensonian relaxation response was developed by Dr. Herbert Benson of Harvard Medical School in 1975. Benson (1975) stated that all people have the ability to bring forth a natural relaxation response. By studying age-old techniques such as transcendental meditation, Benson's research scientifically validated the positive physiologic changes elicited through the relaxation response. Basically, this technique consists of the repetition of a word while adopting a passive attitude in order to break the chain of distracting thoughts. This word will become a cue word to refocus on the relaxation response. This form of relaxation does not cure dental anxiety; however, the relaxation allows the patient to be desensitized and gradually exposed to the feared stimulus.

The Wolpe technique (1964) is a modification of Jacobson's (1929) relaxation techniques. The Wolpe technique is a process of tensing and relaxing the muscles to produce complete muscle relaxation. Corah, Gale, Pace and Seyrek (1981) departed from Wolpe's traditional approach by using tape-recorded muscle relaxation instructions during treatment of anxious dental clients.

Corah et al. (1981) compared the effectiveness of distraction versus relaxation by testing the effects of two forms of auditory stimulation, musical programming and relaxation instructions on alleviating stress during dental procedures. The subjects
included 80 college students, 40 men and 40 women, who required a minimum of two, class II amalgam restorations. Subjects were assigned randomly to one of four groups with each group experiencing different conditions. The first condition was relaxation; the second was music; the third was music with volume control; and the fourth was the control group with no stress reducing interventions. The relaxation condition involved the presentation of tape recorded relaxation instructions through earphones worn by the patient. The recording had instructions to relax various muscles and was started four minutes before the procedure and continued until completion of dental treatment. The second treatment was a music program presented through earphones to the patient throughout the procedure. Subjects could choose the music that they preferred from an available selection. Dental anxiety levels were assessed prior to treatment using Corah’s DAS. There was continuous recording of skin resistance as an autonomic indicator of patient response. At the end of the dental procedure, the subjects rated themselves on the DAS. Measures obtained before experimental treatment were subjected to group-by-gender analysis of variance. All of these analyses resulted in low F ratios for group and group-by-gender interactions. Therefore, it may be assumed that the four groups were comparable for subject relevant variables before the introduction of the experimental procedures.

The scores on the dental anxiety scale were analyzed in a group-by-gender-by-visit analysis of variance. When compared to the control, findings showed a significant reduction in anxiety between visits for the relaxation group, however, for the musical programming groups the reduction in anxiety was not statistically significant. Results
suggest that relaxation is an effective and consistent method of reducing patient anxiety. The effects of the musical program were less conclusive and suggest a possible placebo effect, one which produces beneficial effects in some of the patients some of the time.

Another behavioral strategy to mitigate client anxiety involves guided-imagery. Patients are trained to develop a mental image of a pleasant experience to produce relaxation throughout the body. The choice of imagery varies, but because so many people find it enjoyable to go to the beach, mountains, or lake, these are the most common choices. Instruction involves guiding the client to create a scenario full of specific details, which include the sounds, smells, and colors of the scene, using the imagination. This technique trains the mind to help produce relaxation throughout the body (Krochak & Rubin, 1993).

Various forms of relaxation do not cure dental anxiety, rather, it is exposure to the feared stimulus that cures (Krochak & Rubin, 1993). Achieving a relaxed state allows the patient to become desensitized and gradually exposed to the feared stimulus (Krochak & Rubin, 1993). Exposure is the crucial element and is more successful in vivo than is exposure in vitro (Rubin, Kaplan & Goldstein, 1988).

Hypnosis

Hypnosis has been found effective in reducing fear and tension related to previous unpleasant experiences associated with dental phobias (Rodolfa, Kraft & Reilley, 1990). Richardson (1980) defined hypnosis as an altered state of consciousness characterized by heightened suggestibility that can produce desirable behavioral and physiologic changes. Most individuals can be hypnotized to some degree; 95 percent of the general population
can achieve a light hypnotic trance; 50 percent can achieve a medium trance; and 10 percent can achieve a deep trance; only 5 percent are thought to be unaffected by hypnosis (Richardson, 1980). Children are especially capable of being hypnotized because of their imaginative abilities (Rustvold, 1994).

Baker and Boaz (1983) reported on a case study of a dental patient who was hypnotized for the modification of a dental phobia. A 30-year-old female, who had not been to a dentist in 20 years because of fear, was in need of extensive dental restoration. Measured for trance capacity using the Hypnotic Induction Profile (Spiegel & Spiegel, 1978) proved that she was highly suggestible and a good candidate for hypnosis. Hypnosis using regression techniques revealed that her dental anxiety stemmed from a traumatic tooth extraction when she was a child. While she was in a trance, the disturbing memory was replaced by a nontraumatic memory. After two sessions, the dental phobia was significantly reduced to the extent that two third molars were extracted with the patient reporting no fear of the dentist or the treatment. Baker and Boaz concluded that hypnosis can be successfully applied during dental therapy.

Hypnosis has its drawbacks with some patients reluctant to go into trance states because of public misconceptions and the amount of time required to induce a useful trance (Sokol et al., 1985). Because an experienced clinician must administer the procedure, hypnosis has not achieved great clinical usefulness in dentistry (Gatchel, 1992). However, hypnosis has the potential to be an important and effective tool for the oral care team to use in conjunction with other pain control techniques, such as local anesthesia, or by itself with selected patients (Gokli, Wood, Mourino, Farrington & Best, 1994).
Practitioner Opinions Toward Treating Anxious Clients

Nervous patients adversely affect dental office operations (Corah, O'Shea & Skeels, 1982). Patient anxiety is a source of stress for the oral care team, who must deal with its consequences, i.e., broken appointments, increased chair time because of uncooperativeness, and decreased productivity (Corah, et al., 1982).

Results of a survey conducted on dentists who participated in the Health Screening Program at the 1985 annual session of the ADA were published by Mendola, O'Shea, Corah, Moretti and Ayer (1991). Dentists were asked to complete a short, self-administered questionnaire relating to the general characteristics of their practices, their opinions about fearful patients, and how they were affected by anxious patients. They also rated the effectiveness of specific behavioral interventions. The researchers reported that an anxious patient in the chair caused more than half (55%) of the dentists to become mildly nervous; 16 percent somewhat nervous, and 1 percent very nervous. In addition, it was found that practical experience appeared to have a strong effect on dentists' opinions about the effectiveness of behavioral interventions for managing patient anxiety. Experienced dentists reported behavioral interventions to be effective more so than did inexperienced dentists. Dentists who were nervous when treating anxious patients were more likely to have practiced dentistry for a short time and more likely to have endorsed medication over behavioral interventions, which they viewed to be ineffective. The researchers concluded that practical experience appears to influence strongly dentists' opinions about the effectiveness of behavioral interventions for managing patient anxiety.
Behavioral Management Instruction in the Curricula

Tay et al. (1993) assessed the effect of pre-doctoral, behavioral strategies instruction on dentists' efforts to treat fearful patients. A mail survey, consisting of a booklet of 27 questions, was sent to the 1988 and 1989 graduates of the Universities of Washington, Kentucky and British Columbia. The overall response rate was 80.4 percent (164/204). The sample was narrowed to include only 121 general practitioners who practiced more than 20 hours per week. Graduates from UW and UK who received predoctoral instruction and some UBC graduates who received continuing education on behavioral approaches to caring for fearful patients were compared with UBC graduates who received only a pharmacological-oriented education. Results indicated that the dentists who had received instruction in behavioral strategies reported a significantly higher proportion of fearful adult patients in the most recent month ($\bar{X} = 23.5\%$) as compared with those who had not received behavioral instruction ($\bar{X} = 14.6\%$). A greater effort, at addressing fear during the patient's initial contact with the office, was found for those dentists receiving instruction ($\bar{X} = 6.3$) than those who had received only a pharmacological-oriented education ($\bar{X} = 5.2$). The range of values for this variable was from 2 to 12 where 12 indicated maximum effort.

The researchers concluded that predoctoral instruction in behavioral strategies for managing anxious clients had influenced the clinical behavior of the graduates. This behavior included recognition of a greater number of anxious clients and motivation to identify barriers that hinder fearful patients from receiving care during the client's initial visit. Importantly, the researchers stated detection of anxiety is crucial, as assessment
always precedes successful management. Furthermore, they stated that even though the management of fearful clients occupies only a small portion of the curriculum, it can have a major effect on the practice styles of future dentists, on their clients' perceptions of oral healthcare, and their health habits.

The Commission on Dental Accreditation's (CODA) Accreditation Standards for Dental Hygiene Education Programs (1992) and the American Association of Dental Schools' (AADS) Compendium of Curriculum Guidelines for Dental Hygiene Education (1994) were reviewed. According to the CODA document, an essential content area in dental hygiene curricula is general education. Courses in psychology and sociology must be included in the curriculum; however, specific curricular requirements on behavioral management for anxious dental hygiene clients is nonexistent. Likewise, the AADS document does not include recommendations for instruction in this area. The lack of guidelines or requirements for behavioral instruction gives individual dental hygiene programs broad flexibility to decide what curricula they will include in this area.

**Summary**

In summary, the literature indicates that dental anxiety is a pervasive problem in the general population. Treatment performed by a dental hygienist can provoke as much and in some cases more, anxiety for clients than treatment performed by a dentist (De Jongh & Stouthard, 1993). The management of anxious clients continues to challenge dental hygiene practitioners. Because of the limitations of state dental hygiene practice acts, in most cases, pharmacological interventions for managing pain and anxiety cannot be used by the majority of dental hygienists. To be more effective practitioners, dental
hygienists should be instructed in the use of behavioral strategies which have proven utility in the management of anxious clients. Because the amount and content of behavioral instruction afforded to dental hygiene students is unknown, this study sought to determine what is included in curricula. This knowledge will assist faculty in making effective decisions regarding the future direction of their program curriculum in this area. Furthermore, this study may contribute to the existing body of dental hygiene knowledge, thereby enhancing dental hygiene curricula and practice.
CHAPTER III

METHODS AND MATERIALS

This descriptive study employed a self-designed questionnaire, the King Behavioral Management Questionnaire (See Appendix A), to determine the type and amount of instruction in United States dental hygiene programs in terms of behavioral strategies for the management of anxious clients, the difference in instructional content between associate and baccalaureate degree dental hygiene programs, and the opinions of dental hygiene educators regarding these strategies. Data were gathered by mailing the questionnaire to the directors of dental hygiene programs in the United States.

Sample Description

There are 215 institutions that offer accredited dental hygiene programs in the United States (See Table 1). Excluding the five dental hygiene programs in Virginia (3 associate and 2 baccalaureate programs), which were used in the pilot study, the remaining programs were mailed questionnaires and invited to participate in the study (n=210).

Methodology

The self-designed questionnaire was submitted to a panel of dental hygiene experts at Old Dominion University to establish content validity. Additionally, the questionnaire was pilot tested on the directors from the five dental hygiene programs in Virginia. These two procedures attempted to establish content validity of the questionnaire. Based on the pilot data and feedback from content experts, the questionnaire was revised. In Part I, an item was deleted which requested information on the institutional setting of the program. Part II, contained statements regarding behavioral strategies that respondents could rate
Table 1
Entry-level dental hygiene programs in the United States by credential offered.

<table>
<thead>
<tr>
<th>CREDENTIAL AWARDED</th>
<th># of Programs</th>
<th>% of Programs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certificate</td>
<td>4</td>
<td>1.86%</td>
</tr>
<tr>
<td>Certificate/Associate</td>
<td>3</td>
<td>1.40%</td>
</tr>
<tr>
<td>Certificate/Baccalaureate</td>
<td>5</td>
<td>2.33%</td>
</tr>
<tr>
<td>Certificate/Associate/Baccalaureate</td>
<td>1</td>
<td>0.47%</td>
</tr>
<tr>
<td>Associate</td>
<td>160</td>
<td>74.41%</td>
</tr>
<tr>
<td>Baccalaureate</td>
<td>25</td>
<td>11.63%</td>
</tr>
<tr>
<td>Associate/Baccalaureate</td>
<td>17</td>
<td>7.90%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>215</td>
<td>100</td>
</tr>
</tbody>
</table>

using a five point Likert scale. The statement, "dental hygiene programs have no time to teach behavioral strategies for the management of anxious clients," was deleted and replaced with "dental hygienists trained in behavioral strategies for managing anxious clients may realize more autonomy in their practice setting than dental hygienists without such training." Three statements were changed to reflect opposing viewpoints. "Behavioral strategies are more useful than pharmacological interventions in dental hygiene practice" was changed to read "less useful." "The supervising dentist should be responsible for managing anxious dental clients" was changed to the "dental hygienist should be responsible." "There exists adequate instruction on behavioral strategies in the curriculum of my dental hygiene program" was changed to "inadequate instruction exists in my program."

The questionnaire booklet was numbered to correspond to an individual program,
so that nonrespondents could be identified. On page one of the booklet, a cover letter explained the purpose and importance of the investigation, approximate time needed to complete the survey (10 minutes) and a date for the return of the survey (November 24, 1995). The questionnaire booklet (See Appendix A) was sent to the directors of 210 accredited dental hygiene programs in the United States. Directors were invited to complete the questionnaire if they would be able to provide the most accurate and detailed responses to the questions concerning behavioral management instruction for anxious clients. If the director could not provide the information, he/she was requested to forward the questionnaire to the faculty member who could provide the most accurate responses. Respondents were assured of confidentiality, asked to complete the survey honestly and completely, and asked to return the questionnaire in the self-addressed stamped envelope provided to them. The investigator's address was included so participants could request a copy of the study results. Four weeks after the initial mailing, a questionnaire booklet with a follow-up letter (See Appendix B) was sent to nonrespondents encouraging them to complete and return the survey by December 18, 1995.

Protection of Human Subjects

Survey participants were protected by the following methods:

1. **Potential Risks:** The descriptive study posed no known risks to the respondents except fear of disclosure of information. This risk was minimized by assuring that all of the responses to the questionnaire were kept confidential via coding of the questionnaire and results were reported in group form only.

2. **Consent Procedures:** Participation in the study was strictly voluntary. The
completion and return of the questionnaire to the researcher indicated informed consent by the respondents.

3. Protection of Subjects' Rights: Information obtained from the questionnaire was kept confidential. The results from the study were reported in group form only and were available to the respondents upon request.

4. Potential Benefits: Information obtained from the study could be used by the respective dental hygiene programs to assess their level of instruction in behavioral strategies. The assessment may expose an inadequacy in instruction that may be corrected by the individual institution. Thereby, curricula could be enhanced and revised to include more instruction.

5. Risk/Benefit Ratio: The risks to the participants are minor in comparison to the potential benefits of the study. As mentioned previously, the results could enhance the curricula of dental hygiene programs.

Instrumentation

The measuring instrument that was used in this study is entitled the **King Behavioral Management Questionnaire**, a self-designed questionnaire (See Appendix A). The questionnaire was critically reviewed by content experts and pilot tested for evaluation of the validity of questions and revision of any ambiguous questions. A mailed questionnaire was selected as the instrument of choice since the sample population is dispersed over a large geographical region and mailing the questionnaire would allowed for effective distribution.

The five page questionnaire booklet included the cover letter and the
questionnaire. The questionnaire contained two sections: Part I contained 13 close-ended items and Part II contained six items that were answered using a five point Likert scale.

Part I, item one determined the entry level degree conferred by the dental hygiene program. Item two asked the respondents to select their position on the faculty. Selections ranged from instructor to professor and included other positions such as director or clinical director. Item three determined whether instruction was provided for managing anxious clients to students. If respondents answered "no" they were requested to return the questionnaire. Item four determined what type of management interventions (pharmacologic or behavioral) were included in the curriculum for managing the anxious clients. If respondents chose pharmacological interventions only, they were asked to return the questionnaire. Item five asked respondents to indicate the year of the program in which behavioral instruction was provided to students. In what setting does instruction take place, either classroom or clinic, was asked in item six. If respondents indicate only clinic as the instructional setting, they were asked to skip to item eight. Item seven elicited titles of didactic courses that include behavioral instruction for managing client anxiety. What are the number of hours invested in behavioral management in item eight, allowed respondents to choose between intervals ranging from 0-3 hours to 12-15 hours. Item nine asked respondents to check the behavioral strategies for managing anxious clients. Then in item 10, they were asked which of these strategies were used in the dental hygiene facility with clients. Item 11 asked which media resources were available for use by students while providing oral healthcare at the facility. Items 12 and 13 requested if any faculty member had participated in formal training on behavioral management and in
which strategies they had received training. In Part II, items 14 - 19, respondents could express their opinions about behavioral strategies by selecting a response on a five point Likert scale; one represented strong agreement and five represented strong disagreement.

The validated questionnaire was mailed to 210 dental hygiene programs in the United States. The packet was addressed to the dental hygiene program director and contained a coded questionnaire booklet, including a cover letter, and a self-addressed stamped envelope. The investigator estimated that the questionnaire would take approximately 10 minutes to complete. The respondents were asked to complete the questionnaire for their entry-level degree dental hygiene program.

**Statistical Treatment**

Data analyses were completed using the computer software package, SPSS, except for the Z hypothesis test which was calculated by hand. Frequency distributions, percentages, chi-square test for independence using 2x2 tables, and the Z hypothesis test were used for statistical analyses. Data collected from the questionnaires were nominally scaled, except for data from item 8 which was interally scaled. Percentages were used to determine whether behavioral instruction was included in the curriculum, to what extent and type, and the opinions of dental hygiene educators regarding this instruction. Using the chi-square test for independence, at the .05 level of significance, data were analyzed to determine if significant relationships existed among types of behavioral strategies taught in associate and baccalaureate degree dental hygiene programs. The Z hypothesis test, at the .05 level of significance, was used to test the null hypothesis that there was no statistically significant difference in the amount of hours spent on behavioral instruction between
associate and baccalaureate degree dental hygiene programs in the United States. The Z
test was used because the sample on which the hypothesis was based came from a
population that was not normally distributed.
CHAPTER IV
RESULTS AND DISCUSSION

All United States dental hygiene programs (n = 210), excluding the programs in
the pilot study (n = 5), were surveyed to determine the type and amount of their
instruction on behavioral strategies for managing anxious clients, and the opinions of
dental hygiene educators regarding these strategies. Additionally, the study sought to
determine if there was a difference in the type and amount of behavioral instruction in
associate versus baccalaureate dental hygiene programs. Initially, 210 questionnaires were
mailed resulting in 139 responses (66.15%). A second mailing of 83 questionnaires
produced 31 additional responses (14.76%), resulting in an overall response rate of 170
(80.95%).

Results

The data from the initial sample (n = 170) yielded the following results. Item one
asked what credential is conferred by your institution. Of these 170 programs, four
(2.4%) offered certificates, 136 (80%) offered associate degrees, 24 (14.1%) offered
baccalaureate degrees, and 6 (3.5%) offered both associate and baccalaureate degrees
(See Table 2). Of the 24 programs that did not provide behavioral instruction, 21
(12.35%) offered associate degrees, 1 (.59%) offered a baccalaureate degree, and 2
(1.17%) offered both associate and baccalaureate degrees.

Item two determined the respondents' rank and position on the faculty. Of the 170
respondents, 28 (16.5%) were instructors, 21 (12.4%) were assistant professors, 21
(12.4%) were associate professors, 23 (13.5%) were professors and 77 (45.3%) failed to
Table 2
Entry-level credential conferred by the institutions in the sample (n=170).

<table>
<thead>
<tr>
<th>CREDENTIAL</th>
<th>FREQUENCY</th>
<th>PERCENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certificate</td>
<td>4</td>
<td>2.4%</td>
</tr>
<tr>
<td>Associate</td>
<td>136</td>
<td>80%</td>
</tr>
<tr>
<td>Baccalaureate</td>
<td>24</td>
<td>14.1%</td>
</tr>
<tr>
<td>Both AS/BS</td>
<td>6</td>
<td>3.5%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>170</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 3
Academic rank of respondents (n=170).

<table>
<thead>
<tr>
<th>RANK</th>
<th>FREQUENCY</th>
<th>PERCENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>No response</td>
<td>77</td>
<td>45.3%</td>
</tr>
<tr>
<td>Instructor</td>
<td>28</td>
<td>16.5%</td>
</tr>
<tr>
<td>Assistant Professor</td>
<td>21</td>
<td>12.4%</td>
</tr>
<tr>
<td>Associate Professor</td>
<td>21</td>
<td>12.4%</td>
</tr>
<tr>
<td>Professor</td>
<td>23</td>
<td>13.5%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>170</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 4
Position title of respondents (n=170).

<table>
<thead>
<tr>
<th>POSITION</th>
<th>FREQUENCY</th>
<th>PERCENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Response</td>
<td>25</td>
<td>14.7%</td>
</tr>
<tr>
<td>Director</td>
<td>129</td>
<td>75.9%</td>
</tr>
<tr>
<td>Clinic Director</td>
<td>5</td>
<td>2.9%</td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
<td>2.9%</td>
</tr>
<tr>
<td>More Than 1 Position</td>
<td>6</td>
<td>3.5%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>170</td>
<td>100%</td>
</tr>
</tbody>
</table>
select a rank (See Table 3). Additionally, respondents revealed their positions on the faculty. One hundred twenty-nine (75.9%) were program directors, 5 (2.9%) were clinical directors, 5 (2.9%) held other positions, 6 (3.5%) held more than one position, and 25 (14.7%) held no positions (See Table 4).

Instruction for managing anxious dental hygiene clients is provided to students in 157 (92.4%) of the programs surveyed, with the remaining 13 (7.6%) giving a "no" response (item 3). These 13 programs were directed to return the incomplete questionnaire, reducing the sample to 157 questionnaires.

Item four asked what type of dental anxiety management interventions are discussed in the dental hygiene curriculum. Of the 157 programs, 11 (7%) indicated that only pharmacological interventions were taught, 11 (7%) responded that only behavioral instruction was taught, and 135 (86%) responded that both interventions were taught in the curriculum. Because the rest of the questionnaire elicited answers concerning behavioral strategies, the 11 programs who responded that only pharmacological interventions were taught were asked to return the incomplete questionnaire, leaving 146 programs represented in the sample. Most of the results are based upon these remaining 146 questionnaires.

Research Question One

Are behavioral strategies for managing anxious clients included in dental hygiene curricula in the United States? Of the 170 programs responding, 146 (85.88%) reported that they included behavioral strategies for managing anxious clients in their curricula. Twenty-four respondents (14.12%) reported that they either did not provide instruction
for managing anxious clients or that they only provided instruction on pharmacological interventions for managing client anxiety (items 3 & 4).

Item five asked respondents to locate the year within the program that behavioral instruction is provided. Of the 119 associate degree programs and four certificate programs (n = 123), 33 (26.8%) indicated that behavioral instruction was provided during the first year, 44 (35.7%) indicated second year and 46 (37.3%) indicated both years (See Table 5). Of the 23 baccalaureate programs, 2 (7.4%) indicated second year, 8 (29.6%) indicated that behavioral instruction was provided during the third year, 4 (14.8%) indicated fourth year and 13 (48.1%) indicated more than one year (See Table 6).

Item six queried respondents about the learning environment where behavioral instruction for managing client anxiety took place. Two individuals (1.4%) did not respond, 62 (42.5%) said classroom, 4 (2.7%) said clinic and 78 (53.4%) said both clinic and classroom (See Table 7).

Table 5
Location of behavioral instruction provided in associate and certificate dental hygiene programs.

<table>
<thead>
<tr>
<th>CURRICULUM YEAR</th>
<th>FREQUENCY</th>
<th>PERCENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Year</td>
<td>33</td>
<td>26.8%</td>
</tr>
<tr>
<td>Second Year</td>
<td>44</td>
<td>35.8%</td>
</tr>
<tr>
<td>Both Years</td>
<td>46</td>
<td>37.4%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>123</td>
<td>100%</td>
</tr>
</tbody>
</table>
Table 6
Location of behavioral instruction provided in baccalaureate and dual degree (both associate and baccalaureate) dental hygiene programs.

<table>
<thead>
<tr>
<th>CURRICULUM YEAR</th>
<th>FREQUENCY</th>
<th>PERCENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Second Year</td>
<td>2</td>
<td>7.4%</td>
</tr>
<tr>
<td>Third Year</td>
<td>8</td>
<td>29.6%</td>
</tr>
<tr>
<td>Fourth Year</td>
<td>4</td>
<td>14.8%</td>
</tr>
<tr>
<td>More Than One Year</td>
<td>13</td>
<td>48.1%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>27</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 7
Learning environment where respondents indicated that behavioral instruction was taught in their dental hygiene program.**

<table>
<thead>
<tr>
<th>ENVIRONMENT</th>
<th>FREQUENCY</th>
<th>PERCENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classroom</td>
<td>62</td>
<td>42.5%</td>
</tr>
<tr>
<td>Clinic</td>
<td>4</td>
<td>2.7%</td>
</tr>
<tr>
<td>Both Classroom &amp; Clinic</td>
<td>78</td>
<td>53.4%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>144</td>
<td>98.6%</td>
</tr>
</tbody>
</table>

**2 (1.4%) did not respond to this question

Item seven attempted to determine which didactic courses include instruction in behavioral strategies for managing anxious clients. Most often cited courses were dental hygiene theory/practice, clinic seminar/lecture, community oral health, special client needs, dental/medical emergencies, preventive oral health, pharmacology, periodontology, and
pain control.

Item nine asked respondents to check those behavioral strategies for managing anxious clients taught in their respective program. Of the 146 programs, 140 (95.9%) responded that their curricula included instruction on informational provision, 74 (50.7%) included modeling, 75 (51.4%) included distraction, 90 (61.6%) included relaxation and 10 (6.8%) included hypnosis (See Table 8).

Table 8
Behavioral strategies for managing anxious clients taught in United States dental hygiene programs (n=146).

<table>
<thead>
<tr>
<th>STRATEGY</th>
<th>FREQUENCY</th>
<th>PERCENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informational Provision</td>
<td>140</td>
<td>95.5%</td>
</tr>
<tr>
<td>Modeling</td>
<td>74</td>
<td>50.7%</td>
</tr>
<tr>
<td>Distraction</td>
<td>75</td>
<td>51.4%</td>
</tr>
<tr>
<td>Relaxation</td>
<td>90</td>
<td>61.6%</td>
</tr>
<tr>
<td>Hypnosis</td>
<td>10</td>
<td>6.8%</td>
</tr>
<tr>
<td>Other</td>
<td>6</td>
<td>4.1%</td>
</tr>
</tbody>
</table>

Item 10 asked respondents to check which behavioral strategies were used in the dental hygiene care facility with clients. Of the 146 programs, 133 (91.1%) used informational provision, 51 (34.9%) used modeling, 78 (53.4%) used distraction, 86 (58.9%) used relaxation, and 1 (0.7%) used hypnosis (See Table 9).

Item 11 asked what media resources on managing anxious clients are available for
use by students. Of the 146 respondents, audiotapes were used by 29 (19.9%), 15 (10.3%) used videotapes, 1 (0.7%) used videogames, and 4 (2.7%) used television (See Table 10).

Table 9
Behavioral strategies used in the dental hygiene care facilities of United States dental hygiene programs (n=146).

<table>
<thead>
<tr>
<th>STRATEGY</th>
<th>FREQUENCY</th>
<th>PERCENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informational Provision</td>
<td>133</td>
<td>91.1%</td>
</tr>
<tr>
<td>Modeling</td>
<td>51</td>
<td>34.9%</td>
</tr>
<tr>
<td>Distraction</td>
<td>78</td>
<td>53.4%</td>
</tr>
<tr>
<td>Relaxation</td>
<td>86</td>
<td>58.9%</td>
</tr>
<tr>
<td>Hypnosis</td>
<td>1</td>
<td>0.7%</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
<td>2.1%</td>
</tr>
</tbody>
</table>

Table 10
Media resources used in dental hygiene care facilities of United States dental hygiene programs (n=146).

<table>
<thead>
<tr>
<th>MEDIA RESOURCES</th>
<th>FREQUENCY</th>
<th>PERCENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audiotapes</td>
<td>29</td>
<td>19.9%</td>
</tr>
<tr>
<td>Videotapes</td>
<td>15</td>
<td>10.3%</td>
</tr>
<tr>
<td>Videogames</td>
<td>1</td>
<td>0.7%</td>
</tr>
<tr>
<td>Television</td>
<td>4</td>
<td>2.7%</td>
</tr>
</tbody>
</table>
Research Question Two

Is there a relationship among associate and baccalaureate degree dental hygiene curricula in terms of the behavioral strategies taught for the management of anxious clients? Items 9 and 10 on the survey pertained to this question. Of the 146 responding dental hygiene programs that taught behavioral strategies, 4 were certificate programs, 115 were associate degree programs, 23 were baccalaureate degree programs and 4 programs offered both associate and baccalaureate degree programs. The certificate programs and the programs that awarded both credentials were excluded from the data analysis. The 115 associate degree programs and 23 baccalaureate programs' responses to items 9 and 10 were analyzed using the chi-square test for independence. The statistical software used, SPSS, automatically performs the Fisher exact test when the expected cell frequencies in a 2x2 table are less than 5. Item 9 queried respondents on what behavioral strategies are taught for managing anxious clients. A check mark in the box next to the strategy indicated a "yes" response. Each behavioral strategy in item 9 was analyzed in regards to the entry-level dental hygiene credential awarded. Data analyses reveal no significant relationship between credential offered and behavioral strategy taught (credential by informational provision: Fisher exact = .58; credential by modeling: \( \chi^2 = 2.31, \text{df} = 1, p = .12; \) credential by distraction: \( \chi^2 = .20, \text{df} = 1, p = .64; \) credential by relaxation: \( \chi^2 = .87, \text{df} = 1, p = .34; \) and credential by hypnosis: Fisher exact = .64)(See Table 11). Although not significant, a higher percentage of baccalaureate degree programs responded affirmatively to teaching individual behavioral strategies than associate degree programs (See Table 12 and Figures 1 - 5).
Table 11
Relationship between associate and baccalaureate degree dental hygiene programs and behavioral strategies taught for managing anxious clients.

<table>
<thead>
<tr>
<th>STRATEGY</th>
<th>VALUE $\chi^2$</th>
<th>df</th>
<th>FISHER EXACT</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information Provision</td>
<td>---</td>
<td>---</td>
<td>.58</td>
<td>---</td>
</tr>
<tr>
<td>Modeling</td>
<td>2.31</td>
<td>1</td>
<td>---</td>
<td>.12</td>
</tr>
<tr>
<td>Distraction</td>
<td>.20</td>
<td>1</td>
<td>---</td>
<td>.64</td>
</tr>
<tr>
<td>Relaxation</td>
<td>.87</td>
<td>1</td>
<td>---</td>
<td>.34</td>
</tr>
<tr>
<td>Hypnosis</td>
<td>---</td>
<td>---</td>
<td>.64</td>
<td>---</td>
</tr>
</tbody>
</table>

Table 12
Frequency and percentage of United States dental hygiene programs teaching specific behavioral strategies.

<table>
<thead>
<tr>
<th>BEHAVIORAL STRATEGY</th>
<th>ASSOCIATE n=115</th>
<th>BACCALAUREATE n=23</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informational Provision</td>
<td>(109) 94.8%</td>
<td>(23) 100%</td>
</tr>
<tr>
<td>Modeling</td>
<td>(55) 47.8%</td>
<td>(15) 65.2%</td>
</tr>
<tr>
<td>Distraction</td>
<td>(59) 51.3%</td>
<td>(13) 56.5%</td>
</tr>
<tr>
<td>Relaxation</td>
<td>(68) 59.1%</td>
<td>(16) 69.6%</td>
</tr>
<tr>
<td>Hypnosis</td>
<td>(7) 6.1%</td>
<td>(2) 8.7%</td>
</tr>
</tbody>
</table>

( ) = number of programs  
% = percentage of programs
Figure 1: Comparison of AS and BS degree dental hygiene programs that include informational provision instruction.
Figure 2: Comparison of AS and BS degree dental hygiene programs that include modeling instruction.
Figure 3: Comparison of AS and BS degree dental hygiene programs that include distraction instruction.
Figure 4: Comparison of AS and BS degree dental hygiene programs that include relaxation instruction.
Figure 5: Comparison of AS and BS degree dental hygiene programs that include hypnosis instruction.
Item 10 asked which of these strategies are utilized in the dental hygiene care facility with clients. Chi-square analysis yielded no significant relationship between credential awarded and behavioral strategies used in the dental hygiene care facilities (credential by informational provision: Fisher exact = .69; credential by modeling: \( \chi^2 = .00, \text{df} = 1, p = 1.0 \); credential by distraction: \( \chi^2 = .47, \text{df} = 1, p = .49 \); credential by relaxation: \( \chi^2 = .09, \text{df} = 1, p = .75 \); and credential by hypnosis: Fisher exact = 1.0) (See Table 13).

Table 13
Relationship between associate and baccalaureate dental hygiene programs and behavioral strategies used with clients in the dental hygiene care facility.

<table>
<thead>
<tr>
<th>STRATEGY</th>
<th>VALUE ( \chi^2 )</th>
<th>df</th>
<th>FISHER EXACT</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information Provision</td>
<td>---</td>
<td>---</td>
<td>.69</td>
<td>---</td>
</tr>
<tr>
<td>Modeling</td>
<td>.00</td>
<td>1</td>
<td>---</td>
<td>1.0</td>
</tr>
<tr>
<td>Distraction</td>
<td>.47</td>
<td>1</td>
<td>---</td>
<td>.49</td>
</tr>
<tr>
<td>Relaxation</td>
<td>.09</td>
<td>1</td>
<td>---</td>
<td>.75</td>
</tr>
<tr>
<td>Hypnosis</td>
<td>---</td>
<td>---</td>
<td>1.0</td>
<td>---</td>
</tr>
</tbody>
</table>

Research Question Three

What are the opinions of dental hygiene educators concerning the use and effectiveness of behavioral management for anxious dental hygiene clients? Questionnaire items 14–19 pertained to this research question. Item 14 stated that instruction on behavioral strategies should be included in dental hygiene curricula. Of the 146 respondents, 92 (63.0%) strongly agreed with this statement, 44 (30.1%) agreed, 1 (0.7%)
was undecided, 4 (2.7%) disagreed and 5 (3.4%) strongly disagreed (See Figure 6).

Item 15 stated that behavioral strategies are less useful than pharmacological interventions in dental hygiene practice. Of the 146 respondents, 1 (0.7%) did not respond, 2 (1.4%) strongly agreed, 19 (13.0%) agreed, 18 (12.3%) were undecided, 67 (45.9%) disagreed and 39 (26.7%) strongly disagreed (See Figure 7).

Item 16 stated that behavioral strategies can be effective in managing anxious clients. Of the 146 respondents, 60 (41.1%) strongly agreed, 71 (48.6%) agreed, 3 (2.1%) were undecided, 8 (5.5%) disagreed and 4 (2.7%) strongly disagreed (See Figure 8).

Item 17 stated that inadequate instruction on behavioral strategies exists in the curriculum of my dental hygiene program. Of the 146 respondents, 14 (9.6%) strongly agreed, 43 (29.5%) agreed, 39 (26.7%) were undecided, 35 (24.0%) disagreed and 15 (10.3%) strongly disagreed (See Figure 9).

Item 18 stated that the dental hygienist should be responsible for managing anxious clients. Of the 146 respondents, 3 (2.1%) did not respond, 49 (33.6%) strongly agreed, 70 (47.9%) agreed, 11 (7.5%) were undecided, 10 (6.8%) disagreed and 3 (2.1%) strongly disagreed (See Figure 10).

Item 19 stated that dental hygienists trained in behavioral strategies for managing anxious clients may realize more autonomy in their practice setting than dental hygienists without such training. Of the 146 respondents, 2 (1.4%) did not respond, 36 (24.7%) strongly agreed, 51 (34.9%) agreed, 41 (28.1%) were undecided, 12 (8.2%) disagreed and 4 (2.7%) strongly disagreed (See Figure 11).
Figure 6

Respondents' opinions on whether instruction on behavioral strategies should be included in the dental hygiene curricula.
Figure 7

Respondents' opinions on whether behavioral strategies are less useful than pharmacological interventions in dental hygiene practice.
Figure 8
Respondents' opinions on whether behavioral strategies can be effective in managing anxious clients.
Respondents' opinions on whether inadequate instruction on behavioral strategies existed in the curriculum of their dental hygiene program.
Figure 10

Respondents' opinions on whether dental hygienists should be responsible for managing anxious clients.
Figure 11

Respondents' opinions on whether dental hygienists trained in behavioral strategies may realize more autonomy in their practice setting.
Research Question Four/Hypothesis One

Because item 8 yielded interval data, the Z test was used to test the hypothesis that there is no statistically significant difference between associate and baccalaureate degree dental hygiene programs in terms of the hours of instruction devoted to behavioral strategies. Results indicated a statistically significant difference, with baccalaureate degree programs devoting more instructional hours to behavioral strategies than associate degree programs ($Z = -2.23; \text{RR} = Z \leq -1.96, Z \geq 1.96; p = .026$). Therefore, the null hypothesis was rejected (See Table 14 and Figure 12).

Table 14
Instructional hours on behavioral strategies for managing anxious clients in associate and baccalaureate degree dental hygiene programs.

<table>
<thead>
<tr>
<th>INSTRUCTIONAL HOURS</th>
<th>ASSOCIATE</th>
<th>BACCALAUREATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Response</td>
<td>4.3%</td>
<td>8.7%</td>
</tr>
<tr>
<td>0-3 Hours</td>
<td>34.8%</td>
<td>13.0%</td>
</tr>
<tr>
<td>4-7 Hours</td>
<td>33.9%</td>
<td>34.8%</td>
</tr>
<tr>
<td>8-11 Hours</td>
<td>13.9%</td>
<td>17.4%</td>
</tr>
<tr>
<td>12-15 Hours</td>
<td>13.0%</td>
<td>26.1%</td>
</tr>
</tbody>
</table>

AS = associate (n=115)
BS = baccalaureate (n=23)
Figure 12

Instructional hours on behavioral strategies for managing anxious clients in AS and BS degree dental hygiene programs.
Additional Data

Items on the questionnaire that did not pertain directly to the research questions were tallied using frequencies and percentages. Additional data were gathered regarding faculty training in behavioral management.

Item 12 asked if any faculty member had received training on behavioral management. Forty-one (28.1%) respondents indicated that they did have training. Item 13 asked which behavioral strategies have faculty members received training on. Of the 41 who responded affirmatively to the question, 38 (92.6%) received training on informational provision, 25 (60.9%) received modeling training, 31 (75.6%) received distraction training, 35 (85.3%) received relaxation training, and 13 (31.7%) received hypnosis training (See Table 15).

Table 15
Behavioral strategies in which respondents have received training.

<table>
<thead>
<tr>
<th>STRATEGIES</th>
<th>FREQUENCY</th>
<th>PERCENT (n=41)</th>
<th>PERCENT (n=146)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informational Provision</td>
<td>38</td>
<td>92.6%</td>
<td>26.0%</td>
</tr>
<tr>
<td>Modeling</td>
<td>25</td>
<td>60.9%</td>
<td>17.1%</td>
</tr>
<tr>
<td>Distraction</td>
<td>31</td>
<td>75.6%</td>
<td>21.2%</td>
</tr>
<tr>
<td>Relaxation</td>
<td>35</td>
<td>85.3%</td>
<td>24.0%</td>
</tr>
<tr>
<td>Hypnosis</td>
<td>13</td>
<td>31.7%</td>
<td>8.9%</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>2.4%</td>
<td>0.68%</td>
</tr>
</tbody>
</table>
Discussion

Discussion of the results are reported in order of their relation to the original research questions posed in this study. Other results, that did not pertain directly to the research questions are discussed last.

Research Question One

Are behavioral strategies for managing anxious clients included in dental hygiene curricula in the United States? Of the 170 respondents, 146 (85.88%) reported that they included behavioral strategies for managing anxious clients in their curricula. Twenty-four respondents (14.12%) reported that they either did not provide instruction for managing anxious clients or that they only provided instruction on pharmacological interventions for managing client anxiety. Therefore, the majority of the programs do teach some behavioral strategies. Over 95 percent of the programs teach students to provide procedural and sensory information to clients, 51 percent teach distraction and modeling, 62 percent teach relaxation and 7 percent teach hypnosis. The majority of programs are beginning to include information on behavioral management strategies; however, this topic is not covered comprehensively.

Unfortunately, not all dental hygiene students are taught the full realm of behavioral management strategies. These future dental hygienists, lacking in formal education and experience in behavioral strategies, possess neither the skills nor the confidence to implement these techniques for managing anxious clients (Pawlicki, 1991). Behavioral management instruction for anxious clients could have a major effect on the practice styles of future clinicians, on their clients' perceptions of oral healthcare, and on
clients' oral health habits (Tay et al., 1993).

Behavioral instruction takes place in the classroom in 42.5 percent of the programs, and both classroom and clinic in 53.4 percent of the programs. It is unfortunate that only half the programs surveyed incorporate instruction in both classroom and clinic, because the student and client would benefit if concepts were applied in the clinical setting. Dental hygienists lacking knowledge and experience in managing anxious clients are often unsympathetic and are perceived by clients as being unreceptive to their needs (Mazey & Mito, 1993).

Distraction via audiotapes, videogames, videotapes, and television has been found to be of benefit in reducing client anxiety. Unfortunately, very few of the programs had these tools available for use by students; 20 percent had audiotapes, 2.7 percent had televisions, 0.7 percent had videogames, and 10 percent had videotapes. Audiotapes would be relatively easy to incorporate into the curriculum, i.e., clients could be encouraged to bring their own audiotapes and headsets or the students may have their own to share with the clients. Audiotapes with relaxation instructions, which have been shown to be effective in reducing anxiety (Corah et al., 1981) could be purchased and made available for students to borrow. Television, videogames, and videotapes would be more difficult and costly to incorporate into a didactic or clinical program. Each cubicle would need to have a video monitor that would be expensive in space and dollars. Also, it may be distracting and bothersome to the student if the client had to move around in order to watch the monitor.

Thirty-five percent of programs indicated that modeling procedures were used in
the dental hygiene care facility with clients. Two explanations could account for the absence of live modeling in most programs. One, space limitations created by the cubicle design of many dental hygiene care facilities make the use of live models difficult. Two, in a learning environment, appointments are longer in duration, up to three hours, therefore, live modeling is not practical for most situations. Even though live modeling may be inconvenient, simulated modeling via videotapes could be easily incorporated into this setting. Melamed et al. (1975) found that children who watched a videotape of a peer undergoing dental treatment were more cooperative than children in a control group. Television monitors could be placed in the reception area, so that children could view sealant or prophylaxis procedures on other children before treatment.

Of the behavioral strategies, relaxation and information provision were used most frequently in the dental hygiene programs surveyed. Perhaps one explanation for this finding is that no special equipment or practitioner certification is required for their application. The literature also supports the effectiveness of relaxation and information provision with anxious dental clients.

Only ten programs indicated that hypnosis instruction was provided to students, with one program using this strategy in the dental hygiene care facility with clients. Hypnosis has not achieved great clinical usefulness in dentistry because one must be a trained and experienced clinician in order to practice this skill (Gatchel, 1992). Realistically, it is beyond the scope of a dental hygiene program to prepare students to practice hypnosis. However, students should be introduced to this topic and should be informed as to the preparation required for becoming a hypnotist. Since most dental
hygiene educators are not formally trained in this area, a healthcare professional trained in hypnosis would be an ideal guest lecturer for a session on pain and anxiety control.

**Research Question Two**

Is there a relationship between associate and baccalaureate degree dental hygiene curricula in terms of the behavioral strategies taught for the management of anxious clients? Chi-square and Fisher exact tests revealed that the credential awarded by the program was independent of behavioral strategies taught, and independent of whether the strategy was used with clients in the dental hygiene care facility. Although not statistically significant, a higher percentage of baccalaureate degree programs responded affirmatively to teaching individual behavioral strategies than associate degree programs. This similarity is not surprising given that the credit hours of many associate degree programs are equivalent to, and in some cases exceed those of baccalaureate programs. Also, both associate and baccalaureate entry-level curricula share the common goal of preparation of dental hygienists for clinical practice. Another explanation for this result could be that strategies taught in the curricula of a dental hygiene program are a function of faculty knowledge and opinions in this area, rather than the credential awarded by the program.

**Research Question Three**

What are the opinions of dental hygiene educators concerning the use and effectiveness of behavioral management for anxious dental hygiene clients? Overall faculty opinions were positive in regards to the use and effectiveness of behavioral strategies. Over 90 percent of faculty reported that behavioral strategies should be taught and are effective in managing anxious clients; however, only 28 percent of them received
instruction in this area. Ninety-three percent of the respondents either agreed or strongly agreed that instruction on behavioral strategies should be included in the dental hygiene curricula, with only 6 percent disagreeing and 1 percent undecided. This strong opinion of the majority does not translate into action since many programs do not teach behavioral management comprehensively. Obvious reasons for not teaching behavioral management comprehensively might be the lack of time in an already overloaded curriculum, lack of faculty trained in teaching behavioral strategies, or concern that this skill would not be valued by the dentist employer.

Two-thirds of the respondents (72.6%) either disagreed or strongly disagreed with the statement that behavioral strategies are less useful than pharmacological interventions in dental hygiene practice. Therefore, respondents either believe that behavioral strategies are at least as useful as pharmacological interventions if not more useful in some instances. Fourteen percent of the respondents agreed that behavioral strategies were less useful, whereas 12 percent were undecided. The undecided group may have needed more information to answer the statement or may not have had sufficient exposure to behavioral techniques to form an opinion. However, ideally the statement should have clarified the situation in which the intervention would be used. In some instances, pharmacological interventions may be needed in additional to behavioral strategies, or may be the procedure of choice when significant pain is expected (Sokol et al., 1985).

Ninety percent of the respondents either agreed or strongly agreed that behavioral strategies can be effective in managing anxious clients. Ten percent either disagreed or were undecided. Overwhelmingly, faculty support the use and effectiveness of behavioral
strategies for the management of anxious clients. Faculty opinions are supported by Corah, Gale, Pace, and Seyrek (1981), who found that behavioral strategies, such as distraction and relaxation, can be effective. Because of these favorable opinions and the literature, it is assumed that educators would be receptive toward incorporating more behavioral instruction into their curricula.

Respondents' opinions were split into thirds regarding the statement that inadequate instruction on behavioral strategies exists in their program's curriculum. Thirty-nine percent either agreed or strongly agreed with this statement, with 26 percent undecided and 34 percent disagreeing or strongly disagreeing. Perhaps respondents were hesitant to admit that their program is inadequate in any way. Although previous results show that the majority of programs do not teach the full realm of behavioral strategies, many faculty responded that their curricula was adequate in this area. Perhaps faculty with minimal to no training in behavioral management strategies believe that their programs are adequately covering this subject matter when in reality their programs have shortcomings in this area. Another possible explanation is that some faculty may believe that too little research data exist to support the application of behavioral strategies in clinical practice.

The dental hygienist should be responsible for managing anxious clients. Some faculty wanted this statement to say "for managing their anxious clients," because they wanted to be sure that it did not mean all clients including the dentist's clients. Even though the statement was misleading, 81.5 percent still thought that dental hygienists should be responsible with 16.4 percent either undecided or disagreeing with this
statement. Since many dental hygiene students are poorly versed in behavioral techniques, some may find it difficult to manage anxious clients. Many students, lacking sufficient skills in this area, may be forced to acquire them in practice by trial and error, or worse to never acquire them at all. According to Mazey and Mito (1993) practitioners who lack skills in managing anxious clients often are unsympathetic and perceive these clients as difficult or attention seekers. Furthermore, clients who perceive negative feelings from a clinician may be inclined to seek oral healthcare in another practice thought to be more receptive to their needs.

Over half of the respondents (59.6%) agreed with the statement dental hygienists trained in behavioral instruction will realize more autonomy in their practice setting than those without the benefit of instruction, 28 percent were undecided and 11 percent disagreed. Because state practice acts govern the scope of practice of the dental hygiene practice, many may have felt that behavioral instruction would do little to increase the autonomy of dental hygienists. However, some may have concluded that if dental hygienists could independently manage anxious clients, they would be more efficient and effective practitioners.

Overall, the opinions of dental hygiene educators in regards to behavioral instruction were very positive. Some of the uncertainty regarding these statements could have occurred due to lack of specific knowledge about behavioral management and its value in dental hygiene practice.

Research Question Four/Hypothesis

The amount of instructional hours spent on behavioral instruction was different in
baccalaureate programs versus associate degree programs with baccalaureate programs spending more time. Perhaps, baccalaureate degree programs have more time to devote to behavioral instruction than do associate degree programs. Baccalaureate programs that consist of three years of dental hygiene instruction may be afforded more flexibility within their curricula to include special topics, than do associate degree programs consisting of only two years of dental hygiene coursework. Additionally, baccalaureate programs may require more general education courses, such as psychology, which facilitates additional behavioral science instruction.

Additional Data

Only 41 (28%) of the respondents reported having had formal behavioral instruction for managing anxious clients. Of the 41 faculty who had received training, 38 checked informational provision, 25 modeling, 31 distraction, 35 relaxation and 13 hypnosis. Because only a third of faculty have training in this area, perhaps faculty are unprepared and possibly uncomfortable with teaching this subject matter. However, results showed that the majority of programs provided informational provision, with approximately half of the programs indicating that modeling, distraction and relaxation instruction was provided. Even though faculty do not have formal training, they may have garnered information from reading journal articles and through modeling in clinical experiences, which then may have been incorporated into their class or clinical instruction.

From the responses garnered from the "other" categories, there exists some confusion about what behavioral management entails. Most of the responses in the "other" category tended to be pharmacological interventions, such as local anesthetic
administration and nitrous oxide-oxygen analgesia. These responses might indicate that faculty do not distinguish between behavioral and pharmacological pain and anxiety control.

Additionally, this research revealed that faculty may be unfamiliar with the content of behavioral instruction in their programs. Two dental hygiene programs by mistake completed both the initial and follow-up questionnaires. In comparing the two from the same program, the data showed some disparity. This finding is consistent with the research of Lange, Dunning and Lewis (1993) who discovered that in a sample of dental educators, those reporting to be the most familiar with behavioral science instruction in their program's curriculum, were unsure of the content or skills taught or the faculty member responsible for teaching in this area. This serendipitous finding also brings into question the reliability of the King Behavioral Management Questionnaire.

All in all, incongruence exists in the data obtained from the King Behavioral Management Questionnaire. Faculty revealed positive attitudes regarding behavioral management; however, confusion and lack of knowledge existed amongst the faculty. Additionally, many students were not receiving the benefit of behavioral instruction either because of the lack of curricular time, because there were no curriculum requirements mandating that it be taught, or because faculty were not prepared to teach in this area.

Positive faculty opinions, as identified in this survey, need to be translated into a curricular plan to include behavioral instruction in all dental hygiene programs. Curriculum guidelines for dental hygiene programs should be formulated in this area. Even though instruction in the management of anxious clients occupies only a small
portion of the curriculum it can have a major effect on the practice styles of future oral healthcare professionals. Dental hygienists, skilled in behavioral management for anxious clients, could be more effective and efficient practitioners, affect their clients' perceptions of oral healthcare, influence their health habits, and attract potential clients not seeking care.
CHAPTER V
SUMMARY AND CONCLUSIONS

Dental anxiety has been researched extensively in relation to oral care performed by dentists. De Jongh and Stouthard (1993) revealed that dental hygiene care can provoke a significant amount of anxiety in clients, as much as dental restorative procedures and in some cases, more anxiety. Because of this, the researchers recommended that dental hygienists should be educated in the use of behavioral strategies, which have proven effectiveness for mitigating client anxiety (Corah, 1990). Moreover, the majority of state practice acts prohibit dental hygienists from administering pharmacological agents for pain and anxiety control, thereby lending an ideal condition for the use of behavioral strategies. For these reasons, dental hygienists should be instructed on the use of behavioral strategies for managing client anxiety during oral hygiene care.

Current accreditation standards and guidelines for dental hygiene curricula fail to include requirements or recommendations in the area of behavioral management of client anxiety. Therefore, behavioral strategies for managing anxious clients may be omitted in most dental hygiene curricula. The purpose of this study was to survey United States dental hygiene programs to determine curricular content and amount of instruction in terms of behavioral strategies for the management of anxious clients, the instructional differences between associate and baccalaureate degree dental hygiene programs, and the opinions of dental hygiene educators regarding these strategies. Results may be used in formulating recommendations for instruction in behavioral management of anxious clients, thereby, assisting dental hygiene educators in making effective decisions regarding future
curricula in this area.

A self-designed, 19-item questionnaire entitled the King Behavioral Management Questionnaire was used to collect data from a sample of 170 United States dental hygiene programs. Data were analyzed using frequencies, percentages, chi-square test for independence, and the Z hypothesis test. Frequencies and percentages were used to determine whether behavioral instruction was included in the curricula, to what extent and type, and the opinions of dental hygiene educators regarding this instruction. The chi-square test determined whether significant relationships existed between associate and baccalaureate degree dental hygiene programs and types of behavioral strategies taught. The Z test was used to determine if a statistically significant difference existed in the amount of hours spent on behavioral instruction between associate and baccalaureate degree programs.

Results showed that the majority of dental hygiene programs provided limited behavioral management instruction; however, the subject is not taught comprehensively. Informational provision was taught by 96 percent, with distraction and modeling taught in 50 percent, relaxation taught in 62 percent and hypnosis taught in 7 percent of the programs. There were no significant relationships between associate and baccalaureate degree programs and behavioral strategies taught. A significant difference was found among associate and baccalaureate degree programs regarding instructional hours devoted to behavioral management, with baccalaureate degree programs providing more hours than associate degree programs. Perhaps baccalaureate degree programs consisting of three years of dental hygiene coursework have more hours to devote to special topic areas.
than associate degree programs.

Overall, the sample of dental hygiene educators had positive opinions regarding behavioral instruction, even though only 28 percent have been formally educated in this area. Ninety percent of educators agreed that behavioral strategies were effective and should be included in the dental hygiene curricula. Two-thirds of educators indicated that behavioral strategies are as least as useful as pharmacological interventions in dental hygiene practice. Divided opinions existed amongst respondents on whether their programs included adequate behavioral instruction, with a third indicating that instruction was adequate, a third believing it to be inadequate, and a third undecided. Dental hygienists should be responsible for managing anxious clients was the opinion of the majority; however, only 60 percent of the educators believed that this skill would foster more autonomy in dental hygiene practice.

Results suggest that even though educators held positive opinions regarding behavioral management, the lack of formal preparation in this area may render many educators uncomfortable and unprepared to teach in this area. Therefore, this finding may explain the lack of comprehensive curriculum on behavioral management in most dental hygiene programs.

Considering the limitations of this study the following conclusions are offered:

1. The majority of dental hygiene programs provide some behavioral management instruction in their curricula. However, more comprehensive instruction in dental hygiene curricula is needed.

2. No significant relationships exist between associate and baccalaureate
dental hygiene programs and the types of behavioral strategies taught within the curricula.

3. Baccalaureate degree dental hygiene programs invest significantly more instructional hours on behavioral management than associate degree programs.

4. Dental hygiene educators believe that behavioral strategies are effective in managing anxious clients and that these strategies should be included in the curricula.

As a result of this study, the following recommendations for future research are offered:

1. Establish validity and reliability of the King Behavioral Management Questionnaire.

2. Investigate the effectiveness of individual behavioral strategies in the dental hygiene care facility.

3. Survey dental hygiene practitioners to ascertain the types of strategies used for managing anxious clients in the private practice setting.

4. Design and implement a behavioral instruction curriculum in a dental hygiene program.

Based on the findings of this study, it is evident that more comprehensive behavioral instruction is needed in dental hygiene programs. The majority of dental hygiene educators have not been formally educated in behavioral management and may be unprepared to teach in this area. To resolve this situation, dental hygiene educators to
increase their knowledge and skills could attend continuing education courses, use self-study modules, and/or incorporate behavioral coursework in the process of attaining a lateral or higher degree. Curriculum guidelines for behavioral instruction should be formulated to assist dental hygiene educators in making effective decisions regarding their curricula. Furthermore, dental hygienists educated in managing anxiety, could promote relaxation, facilitate more successful treatment outcomes and enhance the oral healthcare experience for anxious clients. Ultimately, dental hygienists skilled in behavioral management may feel personally rewarded by attracting anxious clients not receiving care, by helping them overcome a difficult barrier, and by assisting them in achieving optimum oral health.
BIBLIOGRAPHY


APPENDIX A

Initial Mailing

Questionnaire Booklet:

King Behavioral Management Questionnaire and Cover Letter
Dear Program Director:

An investigation is being conducted to determine the extent to which curriculum content in behavioral strategies for managing anxious clients is taught in associate and baccalaureate degree dental hygiene programs in the United States. Your participation in this study is important in order to gather information about instruction in this area and in the future formulation of recommendations to enhance dental hygiene curricula and professional practice.

Please complete the enclosed questionnaire or forward it to the faculty member who can provide the most accurate responses and return it by November 24, 1995 in the enclosed self-addressed, postage paid envelope. The questionnaire should take approximately 10 minutes to complete. The number on the questionnaire is for coding purposes to determine nonrespondents only.

Please answer each question completely and truthfully. All information will be kept strictly confidential and results will be reported in group form only. If you are interested in receiving the study results, send a request letter to the address listed below and I will forward a copy to you. Your prompt response, time and effort is greatly appreciated.

Best Regards,

Darnyl M. King, RDH, BA
Master's Degree Candidate
School of Dental Hygiene
Old Dominion University
Norfolk, VA 23529-0499
KING BEHAVIORAL MANAGEMENT QUESTIONNAIRE IN THE DENTAL HYGIENE CURRICULUM

Part I:

Directions: Behavioral management of the dental hygiene client is defined as utilizing behavioral strategies for the reduction of anxiety and stress during oral healthcare. Please read each item carefully and place a check (√) or fill in the appropriate response for each question.

***Please fill out this questionnaire for your entry-level degree program.

1. What credential is conferred by your institution for a graduate of your accredited dental hygiene program?
   - [ ] Associate
   - [ ] Baccalaureate

2. What is your position on the faculty? (check all that apply)
   - [ ] Instructor
   - [ ] Director/Chairperson
   - [ ] Assistant Professor
   - [ ] Clinical Director/Supervisor
   - [ ] Associate Professor
   - [ ] Other ______________________
   - [ ] Professor specify

3. Is instruction for managing anxious dental hygiene clients provided to students in your program?
   - [ ] Yes
   - [ ] No

   If no, please return the questionnaire in the self-addressed, prepaid envelope. Thank you

4. What type of management intervention(s) is (are) discussed in the dental hygiene curriculum for the anxious client? (check all that apply)
   - [ ] Pharmacological interventions (e.g. nitrous oxide-oxygen analgesia, local anesthesia, oral sedatives)
   - [ ] Behavioral interventions (e.g. distraction, relaxation, hypnosis)

   If behavioral interventions are not taught in your program, please return the questionnaire in the self-addressed, prepaid envelope. Thank you.
Directions: Please answer the following questions regarding instruction on behavioral strategies for managing anxious dental clients.

5. Indicate the year of the program that behavioral instruction is provided.

- [ ] 1st year
- [ ] 2nd year
- [x] 3rd year
- [ ] 4th year

6. In what setting(s) does behavioral instruction for managing client anxiety take place?
- [ ] Classroom
- [x] Clinic (If you checked this box only, skip to question #9.

7. Which didactic courses include instruction in behavioral strategies for managing anxious clients?
- [ ] dental hygiene course, please specify course titles. __________________________  

8. What are the number of hours invested in behavioral management instruction.

- [ ] 0 - 3 hours
- [ ] 4 - 7 hours
- [x] 8 - 11 hours
- [ ] 12 - 15 hours

9. What behavioral strategies are taught for managing anxious clients? (Check all that apply)
- [ ] Informational procedures (providing procedural and sensory information to clients)
- [ ] Modeling techniques (watching a peer undergo dental treatment, either real or simulated)
- [ ] Distraction techniques (musical programming, video games and programs)
- [ ] Relaxation techniques (rhythmic breathing, systematic muscle relaxation, imagery)
- [ ] Hypnosis
- [ ] Other __________________________

specify
10. Which of these strategies are utilized in the dental hygiene care facility with clients? (check all that apply)

☐ Information provision  ☐ Distraction
☐ Modeling  ☐ Relaxation
☐ Hypnosis  ☐ Other  

11. What media resources for anxious clients are available for use by students while providing oral healthcare in the dental hygiene care facility at your institution?

☐ Audiotapes  ☐ Videogames
☐ Videotapes  ☐ Television

12. Have any faculty members in your program participated in formal training on behavioral management for the anxious dental hygiene client?

☐ Yes
☐ No (If no, skip to question #14)

13. In which behavioral strategies have faculty members received training?
(check all that apply)

☐ Information provision  ☐ Distraction
☐ Modeling  ☐ Relaxation
☐ Hypnosis  ☐ Other  

specify
Part II:

Directions: Following are six statements regarding the teaching of behavioral strategies for the management of anxious dental hygiene clients. Please read each statement and indicate your opinion toward the statement by circling the number that corresponds with how strongly you agree or disagree with each of the statements:

1. Strongly Agree
2. Agree
3. Undecided
4. Disagree
5. Strongly disagree

14. Instruction on behavioral strategies should be included in dental hygiene curricula.  
   1 2 3 4 5

15. Behavioral strategies are less useful than pharmacological interventions in dental hygiene practice.  
   1 2 3 4 5

16. Behavioral strategies can be effective in managing anxious clients.  
   1 2 3 4 5

17. Inadequate instruction on behavioral strategies exists in the curriculum of my dental hygiene program.  
   1 2 3 4 5

18. The dental hygienist should be responsible for managing anxious clients.  
   1 2 3 4 5

19. Dental hygienists trained in behavioral strategies for managing anxious clients may realize more autonomy in their practice setting than dental hygienists without such training.  
   1 2 3 4 5

This completes the survey. Thank you for your participation.

Please return in the self-addressed, prepaid envelope to:

Darnyl M. King, RDH, BA
Master's degree candidate
School of Dental Hygiene
Old Dominion University
Norfolk, Virginia 23529-0499
APPENDIX B

Second Mailing

Follow-up Letter
Dear Program Director,

Recently you were sent a questionnaire concerning curriculum content on behavioral strategies when managing anxious clients. To date, I have not received your questionnaire. For this study to be representative of the target population, it is important to receive as many responses as possible from the sample population. Information about your program is needed to determine the extent to which curriculum content in behavioral strategies is taught in dental hygiene programs in the United States.

Please complete and return the questionnaire in the enclosed self-addressed stamped envelope by December 18, 1995 if you have not already done so. Again, all responses are confidential and will be reported in group form only.

If you are interested in receiving the study results, send a request letter to the address listed below and I will forward a copy to you. Thank you for taking the time to participate in this research and for your prompt response to this request.

Best Regards,

Darnyl M. King, RDH, BA
Master's Degree Candidate
School of Dental Hygiene
Old Dominion University
Norfolk, VA 23529-0499