FALL • 1991

The JOURNAL of the AMERICAN COLLEGE of DENTISTS

OBJECTIVES of the AMERICAN COLLEGE of DENTISTS

The American College of Dentists in order to promote the highest ideals in health care, advance the standards and efficiency of dentistry, develop good human relations and understanding, and extend the benefits of dental health to the greatest number, declares and adopts the following principles and ideals as ways and means for the attainment of these goals.

(a) To urge the extension and improvement of measures for the control and prevention of oral disorders;

(b) To encourage qualified persons to consider a career in dentistry so that dental health services will be available to all and to urge broad preparation for such a career at all educational levels;

(c) To encourage graduate studies and continuing educational efforts by dentists and auxiliaries;

(d) To encourage, stimulate and promote research;

(e) To improve the public understanding and appreciation of oral health service and its importance to the optimum health of the patient;

(f) To encourage the free exchange of ideas and experiences in the interest of better service to the patient;

(g) To cooperate with other groups for the advancement of interprofessional relationships in the interest of the public;

(h) To make visible to professional persons the extent of their responsibilities to the community as well as to the field of health service and to urge the acceptance of them;

(i) To encourage individuals to further these objectives, and to recognize meritorious achievements and the potentials for contributions to dental science, art, education, literature, human relations or other areas which contribute to human welfare—by conferring Fellowship in the College on those persons properly selected for such honor.

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CONTENTS

Reciprocity and Licensure By Credentials

—*European Style*

FROM THE EDITOR'S DESK

The formation of the European Economic Community (EEC), currently composed of twelve nations, has led to the removal of licensure restrictions for dentists to move to other countries within the EEC, allowing them to move about freely and to change their practice locations within these countries.

In an article entitled, "Dental Licensure in the EEC," that appeared in the Summer 1991 issue of the JOURNAL of the American College of Dentists, James R. Freed and Lester E. Block called attention to the development of European reciprocity and licensure changes, with the possible resulting implications for dentists in the United States. According to the authors, dentists who are graduates of an accepted EEC school of dentistry, who are citizens of an EEC country and who are registered dental practitioners in the country where they graduated, are therefore licensed to practice in any of the EEC countries. The new system involves 129,000 dentists who serve a single market having a total population of over 323 million people within the twelve EEC nations.

The political development of the EEC resulted in the removal of restrictions (taxes and tariffs) between EEC nations in order to facilitate free trade between the twelve countries. The policy was then extended to also include the removal of restrictions on *services* between EEC nations, including health services. This comprehensive health action was entirely accomplished by agreements between governments and apparently irrespective of the wishes of European health organizations.

The role of European health organizations, in this case, was relegated to implementing policies that were set by government. It should be noted that, in Europe, there are no dental associations and no accrediting bodies similar to the U.S. system.

Of considerable concern, the only requirement for licensure will be graduation from an accepted dental school. In effect, this is licensure by credentials. Simply stated, the dental school that grants the dental degree also has the authority to grant the license to practice in twelve countries. No other qualifying post-graduate examinations will ever be required.

Most importantly, therefore, the quality of the education and the curriculum in the EEC dental schools should be of utmost concern because it will be the main basis for quality control and for regulating health professions. In the EEC system, the accreditation and the responsibility for overseeing the schools will rest completely with twelve separate governments controlling and supervising the dental schools, a feature that is not greatly assuring for the highest standards of education.

According to Freed and Block, it is significant that the free market principle, which underlies the changes in Europe, is also the fundamental economic philosophy in the United States. Policies expressed in Europe during the development of the EEC sound surprisingly similar to the thinking currently expressed in the United States, with the advocacy of such actions as the removal of restrictions set by federal and state laws (deregulation), the promotion of competition to lower the cost of health care (deprofessionalization) and the allowing of free interstate movement of dentists (reciprocity) to increase the availability of health care to the public.

An important lesson to be learned from the events in Europe is that major changes affecting particular groups, such as health professionals, can come about as a result of larger social changes rather than by changes desired or recommended by professional groups. It is possible that European-style changes may be proposed in this country, if it is left up to government to do the planning.

The EEC system would not be a good model for the U.S. to follow and U.S. health organizations should be fully aware of what has happened in the EEC. This new European system is alarming in the way it was developed and in the way it will be maintained, controlled and supervised.

It is *IMPERATIVE* that health care organizations in the United States get involved in contemplated changes in the health care delivery system. Any changes in this country should be considered only with the comprehensive involvement of health care organizations so that the health interests of the public are best served and protected. Δ

Keith P. Blair

TEMPOROMANDIBULAR DISORDERS: THE ROLE OF OCCLUSION, TMJ IMAGING, AND ELECTRONIC DEVICES

A Diagnostic Update

Norman D. Mohl*

"To learn how to treat disease, one must first learn how to diagnose. The diagnosis is the best trump in the scheme of treatment"—Charcot.

The first important principle in diagnosis is that the clinician have a clear definition or concept of the disease or disorder that is to be diagnosed. It was with this in mind that the ADA President's Conference adopted the term Temporomandibular Disorders (TMD) in 1982 (Laskin et al., 1982; Griffiths, 1983). A more precise definition of the term TMD was published in the JADA in 1990 (McNeill, et al., 1990b). It stated that: "Temporomandibular disorders represent a collective term embracing a number of clinical problems that involve the masticatory musculature and/or the temporomandibular joint. Temporomandibular disorders are considered to be a subclassification of musculoskeletal and rheumatologic disorders. Although traditionally they have been viewed as one syndrome, current research supports the view that temporomandibular disorders are a cluster of related disorders in the masticatory system with many common features. The most common initial symptom is pain, usually localized in the muscles of mastication, the preauricular area, the temporomandibular joint, or both. The pain is usually aggravated by chewing or other jaw function. Common symptoms include jaw ache, earache, headache, and facial pain. In addition to complaints of pain, patients with these disorders frequently have limited jaw movement and joint sounds, usually described as clicking, grating, or crepitus. Pain or dysfunction caused by nonmusculoskeletal causes such as neurologic, vascular, neoplastic, or infectious disease in the orofacial region is not considered a primary temporomandibular disorder even though myofascial pain may be present." It is important to note from this definition that, although some symptoms may be referred to other sites, TMD is limited to pain and dysfunction arising *in* and *from* the masticatory musculoskeletal system.

In addition to a definition of Temporomandibular Disorders (TMD), the dental profession needs a systematically validated classification system coupled with reliable and valid diagnostic procedures and standards. Such a classification system would be an invaluable asset in determining what *is* and what *is not* a TM disorder, in differential diagnosis, in studies dealing with basic disease mechanisms, in epidemiological studies of TMD, in studies dealing with the natural history of TMD, and in treatment efficacy studies. Well founded diagnostic classifications, in fact, may themselves be regarded as diagnostic tools (Bell, 1982). Some systems have been proposed. In 1990, the American Academy of Craniomandibular Disorders developed a taxonomy for masticatory muscle and temporomandibular joint problems (McNeill et al., 1990a). An advantage of this classification, in addition to its close adherence to a medical model, is that it includes some diagnostic criteria that help

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the clinician to discriminate between the various categories of TMD. Unfortunately, this and other classification systems, although very helpful, have not been systematically validated.

According to Feinstein, "For clinicians to improve scientific quality in the treatment of 'disease', a basic demand of science is an accurate, reproducible identification of 'disease'. Such identifications will require clinicians to establish and disseminate the specific details of suitable criteria for diagnosis of each 'disease' subjected to therapy" (Feinstein, 1967). This statement is a mandate that we develop validated diagnostic taxonomies based upon reliable and valid inclusion and exclusion diagnostic criteria. Unless we accomplish this task, false negative and false positive diagnoses for TMD will continue to occur.

Criteria for Evaluating Diagnostic Procedures

Diagnosis is the art of distinguishing one disease or disorder from another. Differential diagnosis is the determination of which *one* of two or more diseases or disorders a patient is suffering from. This is accomplished by systematically comparing and contrasting the clinical features and characteristics of that disorder with those of other conditions with similar characteristics. It implies that the disease or disorder can be differentiated from normal, from the inherent structural and functional variability that exists among human beings, and from benign and unimportant conditions. In order to achieve these requirements, the use, or proposed use, of a procedure or device in the diagnosis or differential diagnosis of TMD should be based upon sound scientifically-derived evidence. Such evidence must include data that confirms the reliability, validity, sensitivity, and specificity of the diagnostic procedure.

Reliability means that measurement of the phenomenon can be repeated over time. Validity means that the phenomenon being measured is real. With regard to diagnosis, validity means that the procedure or device measures what it claims to measure (*technical validity*) *and* that the resultant measurement can actually help to diagnose what it claims to diagnose (*diagnostic validity*) (Crow et al., 1991). Diagnostic validity requires evidence confirming acceptable levels of sensitivity and specificity; that is, the information obtained from the diagnostic procedure enables the clinician to correctly detect a disorder in patients who actually *have* the disorder (sensitivity), and to *not* detect a disorder in subjects who *do not* have the disorder (specificity). The failure to detect the presence of a disorder that is actually present is called a false negative diagnosis. The identification of a disorder when it does not actually exist is called a false positive diagnosis. A false positive diagnosis can obviously lead to unnecessary or inappropriate treatment, which may have its own very unfavorable consequences.

The real presence or absence of a disease or disorder is determined by the so-called "gold standard," which is the diagnostic procedure, finding, or criterion accepted as the best currently available evidence or indicator of the problem. As with similar musculoskeletal conditions, the "gold standard" for the presence of TMD, or one of its subcategories, is based upon an evaluation of the history and clinical examination, supplemented, when appropriate, by TM joint imaging (Mohl et al., 1990a, McNeill et al., 1990b). A diagnostic procedure that yields a sensitivity ratio of 1.00, when compared with the "gold standard", denotes a measurement that correctly identifies 100% of the cases established by the standard. A value of 0.50 (50%), on the other hand, means that the identification of cases by the measurement is no better than chance alone. A sensitivity ratio of at least 0.70 is considered acceptable in many clinical situations, which implies that in 30% of the cases the measurement will be negative when the disorder is actually present (false negative diagnosis). As for specificity, a ratio of 0.70 means that the measurement will indicate a true negative diagnosis 70% of the time and a false positive diagnosis 30% of the time (Douglass and McNeill, 1983). False positive diagnoses lead to unnecessary treatment, sometimes with irreversible consequences (Greene, 1990).

Clinical research to insure the reliability, validity, sensitivity, and specificity of diagnostic procedures must be well designed and conducted. Among the factors that have to be considered are: 1) clearly described inclusion and exclusion diagnostic criteria, 2) acceptable intra-examiner and inter-examiner reliability, 3) clearly defined measures, 4) measures that are repeated on a sufficient number of patients and normal subjects in order to evaluate the degree of variability among people, 5) random

The real presence or absence of a disease or disorder is determined by the so-called "gold standard," which is the diagnostic procedure, finding, or criterion accepted as the best currently available evidence or indicator of the problem.

assignment of patients and subjects to groups, 6) data collected by "blinded" examiners, 7) replicability of the study by other investigators and in other environments, 8) use of placebos when needed, 9) use of matched control groups to control for such variables as unintended investigator bias, age, gender, socioeconomic status, patient's desire to please, patient's familiarity with the field, placebo effects, and spontaneous remission of the disorder, and 10) appropriate use of sample size and alternative hypotheses to minimize errors in accepting or rejecting the research hypothesis (Mohl and Ohrbach, 1991). The great importance of appropriate matched control groups needs to be emphasized. Such groups are required in order to show that any differences in the phenomenon being studied are not the result of confounding variables. Thus, if the phenomenon occurs equally in both groups, the clinical premise is not valid (Mohl et al., 1990a).

It is within this context that three areas of importance to our understanding of contemporary concepts of TMD will be considered. These are the roles of occlusion, TMJ imaging, and electronic devices in the diagnosis of TMD.

The Role of Occlusion in the Diagnosis of TMD

The importance of occlusion to the art and science of dentistry is beyond question. However, the widely held belief that occlusal factors contribute to or in some way cause the signs and symptoms of TMD is another matter. This is a particularly important issue since belief in the concept of an occlusal etiology implies that an analysis of occlusal relationships is an essential part of the diagnostic protocol for TMD. Some might even be led to believe that "faulty" occlusal relationships are, in themselves, diagnostic of TMD. This belief is derived from the long held concept that a normal occlusion must have certain predetermined "ideal" characteristics, such as coincidence between the interocclusal and retruded contact positions, and that failure of a dentition to have these predetermined characteristics, e.g. a "slide in centric", presupposes a pathognomonic situation.

Such concepts were reinforced by inappropriate conclusions drawn from inadequately designed clinical investigations. For example, Ramfjord stated in 1961 that "a discrepancy between centric relation and centric occlusion is the most common trigger for muscle spasms, bruxism, and dysfunctional temporomandibular joint disturbances" (Ramfjord, 1961a), and that "the most common occlusal factor in bruxism is found to be a discrepancy between centric relation and centric occlusion" (Ramfjord, 1961b). The diagnostic and therapeutic consequences that followed from these conclusions, such as "it appears that elimination of occlusal trigger areas (occlusal interferences) is the treatment of first choice, at least as far as the dentist is concerned" (Ramfjord and Ash, 1983), became to be widely believed by the dental community, and subsequently by the public.

A closer look at these 1961 studies is revealing. A comparison of the occlusal findings of the patients yields perfect sensitivities of 1.0, which means that all of the "TMD" patients used in these studies had "slides in centric." Unfortunately, no specificities can be calculated because no control groups were used. Without the use of control groups showing that asymptomatic subjects do *not* have "slides in centric", the conclusions drawn from these studies cannot be made and the premises underlying the conclusions are not necessarily valid. A subsequent study by Posselt (1971) concerning centric relation interferences and "TMD" yielded data with a sensitivity of 0.97 and a specificity of 0.08. In other words, asymptomatic subjects had the same prevalence of "interferences" as TMD patients.

The failure to find correlations between those occlusal factors that have been studied and TMD has been a consistent finding in a wide range of studies (Geering, 1974; Mohlin & Kopp, 1978; Sadowski & BeGole, 1980; Sadowski & Polson, 1984; Bush, 1985; Sadowski et al., 1985; Egermark-Eriksson et al., 1987; Roberts et al., 1987). Furthermore, the hypothesis that the "slide in centric" is a primary occlusal "trigger" for bruxism has not been sustained (Rugh et al., 1984). Thus, except for the role of posterior tooth loss as a contributory factor in degenerative joint disease of the TMJ (Kopp & Carlsson, 1989), other occlusal factors studied to date have failed to demonstrate any relationships with the signs and symptoms of TMD.

At a conference sponsored by the American Academy of Pediatric Dentistry, it was concluded that: "At this time, there does not appear to be any scientific basis for believing that malocclusion per se is a predisposing factor for the development of TMD. This is true regardless of whether the malocclusion is major or minor, intra-arch or inter-arch, or skeletal or dental. No consistent structural or functional occlusal phenomenon has been correlated with the incidence of TMD, and there is no greater incidence of TMD signs and symptoms in preorthodontic populations than in random populations. Therefore, it is difficult to defend the widely believed myth that orthodontic treatment will prevent or minimize later the development of TMD" (Rugh et al., 1990).

There is no question that an occlusal examination, particularly when used with articulator-mounted dental casts, can facilitate the detailed examination of the static and functional relationships of the teeth. However, in view of the evidence, it is worthwhile to ask whether such an examination serves a useful *diagnostic* purpose for TMD. An occlusal examination, as part of an intraoral examination, is certainly very useful for obtaining information concerning the possible effects of bruxism or other oral habits on the occlusion, and malocclusions may sometimes be observed *as a result of* a TMD problem. However, given the poor diagnostic sensitivity and specificity of occlusal relationships in TMD, an examination of the occlusion is, in most cases, *not diagnostic* of a temporomandibular disorder *per se*.

The Role of TMJ Imaging in the Diagnosis of TMD

As previously stated, the "gold standard" for the presence of TMD, or one of its subcategories, is based upon an evaluation of the history and clinical examination, supplemented, when appropriate, by TM joint imaging. As a potential part of the "gold standard", the use of TMJ imaging raises several important questions, such as: (1) when is TMJ imaging indicated, (2) what imaging technique should be used, (3) what diagnostic criteria should be used to evaluate the resultant image, and (4) what is the diagnostic sensitivity and specificity of TMJ imaging.

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According to McNeill et al (1990b), "Imaging is warranted when the clinical examination or history, or both, indicate that a recent or progressive pathologic joint condition exists, such as: trauma, significant dysfunction or alteration in the range of motion; sensory or motor alterations; or significant changes in occlusal (anterior open bite, posterior open bite, mandibular shift). Joint imaging is not indicated for joint sounds in the absence of other signs and symptoms." The choice of imaging techniques depends upon the preliminary diagnosis gained from the history and clinical examination. For example, when a bony abnormality is suspected, panoramic, transcranial, or tomographic techniques may be employed. Each has its particular attributes and drawbacks with tomography, particularly corrected tomography, providing the most accurate images. Thus, it can be used to detect bony changes, such as those which may be associated with degenerative joint disease. Computed axial tomography is of particular value in assessing bony abnormalities resulting from such conditions as trauma, neoplasm, and developmental anomalies. For selected cases of disk derangement when the imaging results will alter the course of treatment, a dynamic arthrographic study of disk integrity and function is warranted. Magnetic resonance imaging (MRI), which is rapidly becoming the most effective technique of all, may also be used to assess disk position as well as other tissues of the TMJ. MRI also has the great advantage of being non-invasive as compared to arthrography (McNeill et al., 1990b).

When examining the image that results from any of the aforementioned techniques, the criteria used to discriminate between pathology and normal adaptive variations should, whenever possible, be based upon objectively derived clinical research. The inability to accomplish this increases the likelihood of false negative and/or false positive diagnoses. For example, some dentists believe that "the most fundamental decision a clinician faces when diagnosing and treating craniomandibular pain concerns condyle position in the fossae" (Weinberg & Chastain, 1990). Unfortunately, the evidence upon which this belief is based is supported, at best, by clinical studies that do not meet sound scientific standards. The body of available evidence, in fact, strongly suggests that condylar position relative to the articular fossa is very variable and is no different in groups of TMD patients as compared with groups of asymptomatic subjects (Blaschke & Blaschke, 1981; Katzberg et al., 1983; Dixon et al, 1984; Pullinger et al, 1985; Bean & Thomas, 1987; Brand et al., 1989). As a result of the available data, it has been concluded that "there is insufficient evidence that eccentricity of the condyle in the fossa is a diagnostic sign of a temporomandibular disorder" (Griffiths, 1983), and that "temporomandibular joint radiographs to assess condylar position by means of joint space measurements are contraindicated for diagnostic purposes" (McNeill et al., 1990a; 1990b; Laskin & Greene, 1990).

With regard to the diagnostic validity of TMJ imaging, Dixon (1991) has recently assessed this question based upon the small portion of the literature that has data complete enough to allow calculations of sensitivity and specificity. Studies using transcranial radiology to as-

sess posterior condylar position as a diagnostic test for TMD have produced poor sensitivity and specificity values. Weinberg (1983) reported data calculated by Dixon to be 0.58 for sensitivity and 0.64 for specificity. A study by Bean and Thomas (1987) produced data yielding a sensitivity of 0.13 and a specificity of 0.87. Using arthrographically determined disc position as the "gold standard" against which posterior condylar position was compared, Dixon et al (1984) reported a sensitivity of 0.41 and a specificity of 0.55, values that are no better than chance.

Ronquillo et al (1988), using tomographic analysis of posterior condylar position, as compared with arthrographic evaluation of disc position, reported data with sensitivity scores of 0.61 for disc displacement with reduction and 0.33 for disc displacement without reduction. Specificity was 0.65. A similar study by Katzberg et al (1983) reported data yielding a sensitivity of only 0.30 and a specificity of 0.65. Dixon (1991) has also done calculations from the few studies involving computed tomography, arthrography, and magnetic resonance imaging that report data capable of assessing diagnostic validity.

The role of TMJ imaging in the diagnosis of TMD should be carefully considered in each case. For one thing, the results of imaging do not necessarily correspond to the patient's signs and symptoms. Furthermore, as Howard (1990) has written, "imaging studies are often used as a scapegoat when the clinical examination doesn't reveal a diagnosis," and is often "used as a pacifier to demonstrate to the demanding, unmanageable patient that the clinician has not missed anything." The point to be made is that, unless TMJ imaging can be shown to have diagnostic reliability, validity, sensitivity, and specificity, its usefulness in the diagnosis of TMD deserves to be questioned.

The Role of Electronic Devices in the Diagnosis of TMD

There have been several reviews of the scientific literature to assess the role of electronic devices in the diagnosis of TMD (Lund & Widmer, 1989; Lund et al., 1989; Widmer, 1989; Mohl et al., 1990a, Mohl et al., 1990b; Mohl et al., 1990c; Laskin & Greene, 1990; Widmer et al., 1990; Laskin & Greene, 1991).

. . . unless TMJ imaging can be shown to have diagnostic reliability, validity, sensitivity, and specificity, its usefulness in the diagnosis of TMD deserves to be questioned.

These reviews have revealed that their *diagnostic* reliability, validity, sensitivity, and specificity, have not been established. Collectively, these reports have concluded that there are gaps in the evidence and major flaws in much of the clinical research and, as a result, the diagnostic value of jaw tracking, surface EMG, sonography, and thermography is not well supported by the scientific evidence. In addition, the scientific evidence strongly suggests that the claimed use of electrical stimulation devices to produce a neuromuscularly "correct" position of the mandible has no diagnostic or therapeutic significance (Lund & Widmer, 1989; Mohl et al., 1990c). Therefore, the use of such devices by clinicians should be very carefully considered since there is a tendency for them to give information leading to, typically, false positive diagnoses.

With regard to jaw tracking, Cooper & Rabuzzi (1984), in a study using asymptomatic subjects, reported that the amplitude, path of closure from rest position, and form and amplitude of voluntary movements have diagnostic importance. However, other investigators, have failed to confirm their conclusions. For example, Feine et al (1988) tested these diagnostic criteria and were unable to show significant differences between groups of normal subjects and TMD patients.

The use of surface EMG in TMD diagnosis is based on the assumption that various pathologic or dysfunctional conditions can be discerned from records of EMG activity of the masticatory muscles, including such things as postural hyperactivity, abnormal occlusal positions, functional hyperactivity and hypoactivity, muscle spasm, fatigue, and muscle "imbalance." In addition, records of EMG activity before and after therapeutic intervention have been used to document changes in muscle function and have been cited as proof that the treatment was successful. However, analysis of the available data reveals several major deficiencies in the research underlying the proposed diagnostic use of EMG. For example, Cooper & Rabuzzi (1984), after collecting EMG data from a group of asymptomatic subjects, concluded that 81% had "muscle dysfunction," merely because their resting EMG amplitude was over 10uV. Since no TMD patients were used in this investigation, it did not provide any data from which to calculate sensitivity. It did, however, yield a specificity score of 0.19, meaning that the "diagnostic test" is strongly biased toward a false positive diagnosis. Furthermore, a study by Majewski and Gale (1984) failed to find any significant temporal muscle EMG dif-

Symposium: Women Dentists

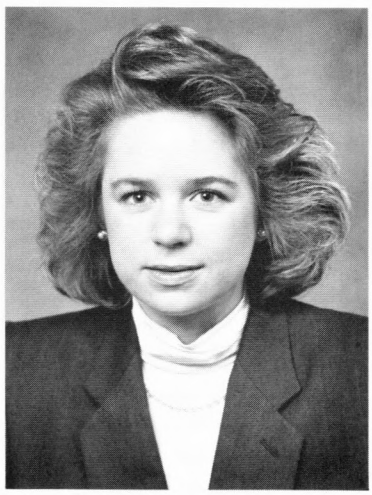
GENDER TRENDS IN DENTAL PRACTICE PATTERNS

A Review of Current U.S. Literature

Teresa A. Dolan*

The dental profession in the United States has experienced a recent and dramatic increase in the number of women dentists. Until the 1960's, women comprised about one percent of dentists in the work force (1). Since then, the number of females applying to and enrolling in dental school has increased dramatically. Of the 4,001 students in the 1990 entering class, 1522, or more than 38 percent, were female. This represents more than an 11 percent increase in just one year (2). However, women dentists remain a distinct minority group within the profession. About 6–8% of dentists in the United States are female, and projections indicate that women will account for approximately 15% of dentists in the year 2000 (3).

In the past decade, the profession has witnessed several "women in dentistry" milestones, which remind us of the recency of women's participation in dental professional leadership. In 1984, Dr. Geraldine Morrow became the first woman to be elected to the American Dental Association (ADA) Board of Trustees. She now serves as president elect of the ADA. Currently, there are five female members of the ADA House of Delegates, and there are eight members of ADA councils and commissions. The male/female ratio of the Board of Trustees is 20:1, which is dramatically different than what existed 10–15 years ago (4).



Teresa A. Dolan

Dr. Enid Neidle's Presidential Address at the American Association of Dental Schools Opening Session of the 1986 House of Delegates clearly brought into focus the changing gender trends in dental education, and the lack of role models and women in positions of leadership in dental academics (5). Finally, the First National Conference on the Woman Dentist was convened in August of 1986 as an initial effort to address issues of significance to women dentists. The conference also brought into focus some of the many unanswered questions regarding the implications of the increasing number of women dentists.

Until recently, little was known about national gender trends in dental practice patterns. Since the First National Conference on the Woman Dentist, three national surveys of U.S. dentists have provided data on the personal characteristics of male and female dentists, choice of practice arrangement, measures of professional work effort, and income from the practice of dentistry. This paper will summarize these findings, and suggest areas for future consideration.

Methods

The three studies to be reviewed include the work of Dolan and Lewis (6) published in 1987, that of Wilson, Branch and Niessen published in 1988 (7), and the 1988 Survey of Dental Career Patterns published in 1989 (8). Each cross-sectional study employed a self-administered survey of a national sample of dentists. Each used independent yet similar survey items to

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Presented at the Annual Session of the American Association of Dental Schools March 11, 1991 in New Orleans, sponsored by the Section of Pediatric Dentistry

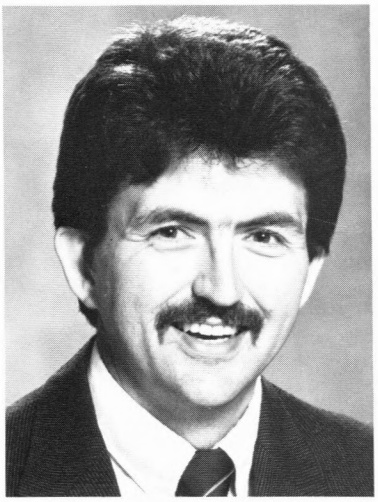
WOMEN DENTISTS: IMPACT, TRENDS AND IMPLICATIONS

SYMPOSIUM

William F. Waggoner: Moderator*

Women have been entering dental schools and the dental profession in ever increasing numbers. In 1990, more than 38% of the 4,001 students entering dental school were female, an increase of more than 11% in just one year. However, the large percentage of women entering my own specialty, pediatric dentistry, spurred the initial interest and questions for a symposium. Pediatric Dentistry, more than any other specialty, has seen the largest influx of women. In 1971 there were very few women in pediatric dentistry training programs, by 1981 about 25% of the pediatric residents were women, but by 1990 women made up just over 50% of the applicant pool and held 50% of the positions in advanced training pediatric dental programs.

The original intention of this symposium was to determine what, if any, impact that increasing numbers of women were having specifically in pediatric dentistry. Of particular interest were issues such as practice patterns, career expectations, frustrations, and gender differences in patient management practices. There were a number of significant issues which were not specific to pediatric dentistry but which were much more global in nature and reached across the spectrum of dentistry, from pre-doctoral and post-doctoral education to practice; and affecting all specialties as well as general practitioners. With this realization came the expansion of the symposiums from one that was discipline specific to a program taking on a broad range of gender-related issues.



William F. Waggoner

The primary goal of this symposium was to serve as a catalyst for organized dentistry to more closely examine the trends, the impact and the implications that women dentists are having within dentistry and to identify areas where in increased attention should be placed. The following six papers help to provide that catalyst.

In her paper, Dr. Theresa Dolan provides a comprehensive review of three national studies that compare gender trends in dental practice, including such issues as practice arrangements and income, work effort and practitioner characteristics. Of particular interest are findings that women dentists work only slightly fewer hours per week and weeks per year than men, yet their income level on average is only 61 to 75% of their male counterparts.

Dr. Shelia Price offers some insight, based on the results of her survey, on minority women dentists, their job satisfaction, practice characteristics and attitudes. Dr. Juliann Bluitt, an Associate Dean for Student Affairs at Northwestern University Dental School, is well qualified to identify and offer suggestions for addressing the needs of female dental students. In her paper she identifies a number of issues with which female dental students must deal, including child care, family and spousal support, conflicts in role identity, sexual harassment and acceptance by male peers and faculty.

In his paper, Dr. Eric Solomon provides some excellent data regarding women dentists who choose academic careers and Dr. David Nash provides some thoughtful and straightforward challenges to rejecting the "feminine mystique" in dental education. Dr. Nash discusses the need for creating an environment which will recruit, retain and advance women within academic dentistry. Finally, Dr. Linda Niessen offers some challenges for change. Dentistry must begin working, not on changing women to better "fit" dentistry, but to changing itself to bettter "fit" its new members.

In 1987, just over 6% of all dentists were women. Projections are that by 2020 women will comprise more than 30% of all dentists. Even if the percentage of women were projected to remain at its present level, the time is well upon us when the profession should examine the contributions and enhancements that women are bringing to the profession as well as the unique challenges with which they are faced. △

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of the relationship between occlusal factors and mandibular dysfunction in children and adolescents. J Dent Res 66:67–71, 1987.

Feine JS, Hutchins MO, Lund JP: An evaluation of the criteria used to diagnose mandibular dysfunction with the mandibular kinesiograph. J Prosthet Dent 60:374–380, 1988.

Feinstein AR: *Clinical Judgement*. Robert E. Krieger Publ. Co., Malabar, Fl., pp. 101–102, 1967.

Geering AH: Occlusal interferences and functional disturbances of the masticatory system. J Clin Perio 1:112–119, 1974.

Greene CS: Can the use of technological modalities enhance TM Disorders diagnosis? J Calif Dent Assoc 18:21–24, 1990.

Griffiths RH: Report of the president's conference on the examination, diagnosis, and management of temporomandibular disorders. J Am Dent Assoc 106:75–77, 1983.

Howard JA: Imaging techniques for the diagnosis and prognosis of TMD. J Calif Dent Assoc 18:61–71, 1990.

Katzberg RW, Keith DA, Ten Eick WR, Guralnick WC: Internal derangements of the temporomandibular joint: An assessment of condylar position in centric occlusion. J Prosthet Dent 49:250–254, 1983.

Kopp S, Carlsson GE: The temporomandibular joint: problems related to occlusal function. In: *A textbook of Occlusion*. Ed by Mohl ND, Zarb GA, Carlsson GE, Rugh JD, Quintessence Publ Co, Chicago, Chap 17, 1989.

Laskin D, Greenfield W, Gale E, Rugh J, Neff P, Alling A, Ayer WA: The President's Conference on the Examination, Diagnosis and Management of Temporomandibular Disorders. American Dental Association, 1982.

Laskin DM, Greene CS: Diagnostic methods for temporomandibular disorders: What have we learned in two decades? Anesth Prog 37:66–71, 1990.

Laskin DM, Greene CS: Technological methods in the diagnosis and treatment of temporomandibular disorders. Int J Technol Assess Health Care 1991 (In Press).

Lund JP, Lavigne G, Feine JS, Goulet JP, Chaytor DV, Sessle BJ, Zarb G, Greenwood LF, Hannam AG, Wood WW, Brooke RI: The use of electronic devices in the diagnosis and treatment of temporomandibular disorders. J Canad Dent Assoc 55:747–750, 1989.

Lund JP, Widmer CG: An evaluation of the use of surface electromyography in the diagnosis, documentation, and treatment of dental patients. J Craniomand Disord Fac Oral Pain 125–137, 1989.

Majewski RF, Gale EN: Electromyographic activity of temporal area pain patients and non-pain subjects. J Dent Res 63:1228–1231, 1984.

Marbach JJ: Laszlo Schwartz and the origins of clinical research in TMJ disorders. NY State Dent J pg 38–41, Feb 1991.

McNeill C (Ed): Craniomandibular Disorders: Guidelines for Evaluation, Diagnosis, and Management. The American Academy of Craniomandibular Disorders, Quintessence Publ. Co., Chicago, 1990a.

McNeill C, Mohl ND, Rugh JD, Tanaka TT: Temporomandibular disorders: diagnosis, management, education, and research. J Am Dent Assoc 120:253–263, 1990b.

Mohl ND, McCall WD, Lund JP, Plesh O: Devices for the diagnosis and treatment of temporomandibular disorders. Part I: Introduction, scientific evidence, and jaw tracking. J Prosthet Dent 63:198–201, 1990a.

Mohl ND, Lund JP, Widmer CS, McCall WD: Devices for the diagnosis and treatment of temporomandibular disorders. Part II: Electromyography and sonography. J Prosthet Dent 63:332–336, 1990b.

Mohl ND, Ohrbach RK, Crow HC, Gross AJ: Devices for the diagnosis and treatment of temporomandibular disorders. Part III: Thermography, ultrasound, electrical stimulation, and EMG biofeedback. J Prosthet Dent 63:472–477, 1990c.

Mohl ND, Ohrbach R: The dilemma of scientific knowledge vs. clinical management of TMD. J Prosthet Dent, 1991 (In Press).

Mohlin B, Kopp S: A clinical study on the relationship between malocclusion, occlusal interferences, and mandibular pain and dysfunction. Swed Dent J 3:163–172, 1978.

Posselt U: The temporomandibular joint syndrome and occlusion. J Prosthet Dent 25:432–438, 1971.

Pullinger AG, Hollender L, Solberg WK, Petersson A: A tomographic study of mandibular condyle position in an asymptomatic population. J Prosthet Dent 53:706–714, 1985.

Ramfjord SP: Dysfunctional temporomandibular joint and muscle pain. J Prosthet Dent 11:353–374, 1961a.

Ramfjord SP: Bruxism, a clinical and electromyographic study. J Am Dent Assoc 62: 21–43, 1961b.

Ramfjord SP, Ash MM: *Occulsion*. 3rd edition. Philadelphia: WB Saunders Co, p 358, 1983.

Roberts CA, Tallents RH, Katzberg RW, Sanchez-Woodworth RE, Manzione JV, Espeland MA, Handelman SL: Comparison of internal derangements of the TMJ with occlusal findings. Oral Surg, Oral Med, Oral Path 63:45–50, 1987.

Ronquillo HI, Guay J, Tallents RH, Katzberg RW, Murphy W: Tomographic analysis of mandibular condyle position as compared to arthrographic findings of the temporomandibular joint. J Craniomand Disord Oral Fac Pain 2:59–64, 1988.

Rugh JD, Barghi N, Drago CJ: Experimental occlusal discrepancies and nocturnal bruxism. J Prosthet Dent 51:548–553, 1984.

Rugh JD, Stohler CS, Carlson D, Greene CS, Storey AT, Dixon DC, Mohl ND, Montgomery MT, Okeson JP, Ingerslev H, Barbat LD: Treatment of temporomandibular disorders in children: summary statements and recommendations. J Am Dent Assoc 120:265–269, 1990.

Sadowski C, BeGole EA: Long-term status of temporomandibular joint function and functional occlusion after orthodontic treatment. Amer J Orthod 78:201–212, 1980.

Sadowski C, Polson AM: Temporomandibular disorders and functional occlusion after orthodontic treatment: Results of two long-term studies. Am J Orthod 86:386–390, 1984.

Sadowski C, Muhl ZF, Sakols EI, Sommerville JM: Temporomandibular joint sounds related to orthodontic therapy. J Dent Res 64:1392–1395, 1985.

Weinberg LA: The role of stress, occlusion, and condyle position on TMJ dysfunction-pain. J Prosthet Dent 49:532–545, 1983.

Weinberg LA, Chastain JK: New TMJ clinical data and the implication on diagnosis and treatment. J Am Dent Assoc 120: 305–311, 1990.

Widmer CG: Temporomandibular joint sounds; A critique of techniques for recording and analysis. J Craniomand Fac Oral Pain 4:213–217, 1989.

Widmer CG, Lund JP, Feine JS: Evaluation of diagnostic tests for TMD. J Calif Dent Assoc 18:53–60, 1990.

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ferences between pain and non-pain sides and between patients and asymptomatic subjects. Thus, there is no evidence to support the use of EMG for the evaluation or diagnosis of TMD (Lund & Widmer, 1989; Mohl et al., 1990b).

Sonography is also believed by some to have a role in the diagnosis of TMD. Various authors have attempted to demonstrate that certain joint sounds are an objective sign of various pathologic conditions in the TMJ. However, there are only a small number of published reports in the literature that have evaluated the diagnostic potential of TMJ sonography, and these have so far failed to show appropriate levels of diagnostic sensitivity and specificity (Widmer, 1989; Mohl et al., 1990).

With regard to role of electronic devices in the diagnosis of TMD, the key question is whether the clinician gains diagnostically relevant information from such devices. This is an important question in view of the sparse and mostly unreplicated scientific evidence linking the use of electronic devices to TMD diagnosis.

Conclusions

It is clear that the history and clinical examination is the principle basis upon which the diagnosis of TMD, or one of its subcategories, is made. Thus, these procedures must be performed carefully and deliberately. It is worth noting, however, that all clinical findings are not equally or even necessarily significant since some may represent normal variations or benign conditions. The painless or otherwise asymptomatic joint click may be such an example. In the absence of a patient's complaint, the idea of a preclinical or borderline TM disorder is not acceptable unless it is clear that the observed finding is unquestionably a precursor of an overt problem to follow. Since it is currently impossible to arrive at such a conclusion, the patient's chief complaint, followed by a thorough history and objective clinical examination, should be the principal basis for diagnosis.

Finally, when approaching a diagnostic stiuation, it is important that the clinician not create a "self-fulfilling prophecy." This occurs when the patient is immediately labeled a "TMD patient." Such a label places the individual into a category of definitely having a TM disorder, and if one's beliefs include occlusal etiologies, then the label "TMD patient" will also imply that the patient also has an "occlusal problem." It is better to regard a patient as an individual with possible specific problems, and not a predetermined "TMD patient." It follows that the process of establishing a differential diagnosis for TMD involves ruling *out* specific conditions from a diagnostic classification system and not ruling *in* the one diagnosis that first occurs to the clinician. Such an approach, coupled with an objective evaluation based upon the available scientific evidence, will greatly reduce the risk of false negative and false positive diagnoses (Mohl & Ohrbach, 1991). This approach to the diagnosis of TMD would also be compatible with the concepts underlying the clinical research of Dr. Laszlo Schwartz, who, throughout his career, sought "to provide new, perhaps counter-intuitive, information" (Marbach, 1991). △

With regard to role of electronic devices in the diagnosis of TMD, the key question is whether the clinician gains diagnostically relevant information from such devices.

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References

Bean LR, Thomas CA: Significance of condylar positions in patients with temporomandibular disorders. J Am Dent Assoc 114:76–77, 1987.

Bell WE: Classification of TM disorders. The President's Conference on the Examination, Diagnosis and Management of Temporomandibular Disorders. American Dental Association, pp. 24–29, 1982.

Blaschke DD, Blaschke TJ: Normal TMJ bony relationships in centric occlusion. J Dent Res 60:98–104, 1981.

Brand JW, Whinery JG, Anderson QN, Keenan KM: Condylar position as a predictor of temporomandibular joint internal derangement. Oral Surg, Oral Med, Oral Path 67:469–476, 1989.

Bush FM: Malocclusion, masticatory muscle, and TMJ tenderness. J Dent Res 64: 129–133, 1985.

Cooper BC, Rabuzzi DD: Myofacial pain dysfunction syndrome: a clinical study of asymptomatic patients. Laryngoscope 94: 68–75, 1984.

Crow HC, McCall WD, Mohl ND: Electronic technology for clinical prosthodontics. Current Opin Dent, 11:53–57, 1991.

Dixon DC, Graham GS, Mayhew RB, Oesterle LJ, Simms D, Pierson WP: The validity of transcranial radiology in diagnosing TMJ anterior disk displacement. J Am Dent Assoc 108:615–618, 1984.

Dixon DC: Diagnostic imaging of the temporomandibular joint. Dent Clin N Am 35: 53–74, 1991.

Douglass CW, McNeill BJ: Clinical decision analysis methods applied to diagnostic tests in dentistry. J Dent Ed 47:708–712, 1983.

Egermark-Eriksson I, Carlsson GE, Magnusson T: A long term epidemiological study

obtain data about the dentists and their professional activities. The survey methodologies are summarized in Table 1 and described below. For more complete study descriptions, please refer to the original reports.

Dolan and Lewis (6) secondarily analyzed data from a study *Employment of Recent Dental Graduates* funded by the Department of Health and Human Services (USPHS). The population sampled was all 1979, 1980, and 1981 graduates of US dental schools (n = 14,228 dentists, including both members and nonmembers of the ADA). A random sample of 4,470 dentists were selected to receive the self-administered questionnaire. Surveys were mailed in the spring and summer of 1985. The 40-item survey included questions about employment activities, private practice characteristics of primary and secondary practice location, postdoctoral training, personal background, educational indebtedness, and considerations important in determining choice of location and/or type of practice. Overall, 3,059 responses from an adjusted sample of 3,940 dentists were received for an adjusted response rate of 77.6 percent. The gender distribution of respondents was 2,649 males and 346 females. Men were slightly over-represented in all three graduation years.

Wilson, Branch, and Niessen (7) analyzed data from the 1985 *American Dental Association Survey of Dental Practice* to determine the similarities and differences in the practice, patient, and productivity characteristics among male and female dentists who graduated from dental school in or after 1975. The American Dental Association has periodically conducted the *Survey of Dental Practice* since the early 1950's. The purpose of this survey is to collect data from a national sample of dentists in private practice in order to examine economic and practice characteristics (8). For the 1985 Survey, a stratified systematic sample of more than 130,000 actively practicing dentists including both ADA and non-ADA members was selected. A total of 5,713 dentists responded for a 47.5% response rate. Of those who responded, 5,572 were male and 141 were female. The Wilson, et. al. analysis included only those dentists who graduated in or after 1975, which included 1,141 males and 110 females. Variables used in the analyses of gender differences were categorized into practice, patient, and productivity characteristics.

A limitation of the previously described studies is the relatively small number of female dentists sampled. Larger samples are required to provide reliable estimates of differences in practice characteristics for male and female dentists. The third study, *A report of the 1988 Survey of Dental Career Patterns* (8), was directed and funded by the ADA Council on Dental Practice with the assistance from the ADA Bureau of Economic and Behavioral Research. The Council recognized the lack of practice data about female dentists and funded this study, which is the first na-

Table 1. Summary of characteristics of three recent national surveys of gender trends in dental practice patterns in the United States

Authors	Year Published	Study design	Response Rate	Sample Size Male	Female
Dolan & Lewis[1]	1987	secondary analysis cross-sectional recent dental graduates	77.6%	2649	346
Wilson, Branch & Niessen[2]	1988	secondary analysis cross-sectional 1985 ADA Survey of Dental Practice	47.5%	1414	110
ADA Council on Dental Practice[3]	1989	primary analysis cross-sectional 1985 Survey of Dental Career Patterns	60.5%	1179	1053

[1]Dolan TA, Lewis CE. Gender trends in the career patterns of recent dental graduates. J Dent Educ 1987;11:639–645.
[2]Wilson AA, Branch LG, Niessen LC. Practice patterns of male and female dentists. JADA 1988; 116:173–177.
[3]Bureau of Economic and Behavioral Research, Council on Dental Practice, American Dental Association. A comparative study of male and female dental practice patterns. May 1989.

tional survey of dental practice to oversample women dentists and include a male comparison group. Surveys were mailed in 1988 to a sample of ADA and non-ADA members including 2,527 male and 2,503 female dentists. Usable data was obtained from 2,729 dentists with 2,232 in private practice for an overall 60.5% response rate. Of the private practitioners responding to the survey, 1,179 (52.8%) were male and 1,053 (47.2%) were female. The results were reported as comparisons of all male and female respondents, and for respondents under age 45, since 89% of the female respondents were less than 45 years old.

Results
Personal Characteristics of Male and Female Dentists

While the major focus of the three investigations is gender trends in dental practice patterns, it is logical to investigate the personal characteristics of the respondents, and the association of these characteristics to their practice situations. For example, it is often assumed that contemporary women have weak and unstable commitments to the work role (9). It has been suggested that a woman subordinates her career when she has children (10,11) or when combined family incomes are high (12). However, the relationship between family roles and professional work effort and productivity has not been well studied. The studies summarized in this report suggest that women dentists may be choosing to not have children, or to have fewer children then their male colleagues. Whether this is related to career choices or other factors has not been investigated. However, the available data on professional work effort and productivity indicate that women maintain active careers, take very minimal leaves of absences for child rearing, and bear the burden of household and family responsibilities.

Data on respondent background characteristics are available in two of the three studies, Dolan & Lewis (6), and the ADA 1988 Survey (8). Both studies suggest that female dentists are less likely to be married than their male colleagues. In the Dolan and Lewis report, 24.2% of females and 17.3% males had never been married. In the ADA 1988 Survey 17% of females and 6% of males had never been married. Likewise, female respondents, on average, had fewer children. In the Dolan and Lewis study, women had 0.38 children and men had 0.62 children. In the ADA 1988 Survey, women had 0.94 children and males had 2.24 children. The trends are similar in the two studies, and the difference in magnitude is probably due to the fact that respondents in the Dolan & Lewis study were younger, on average, than those in the ADA 1988 Survey.

The ADA 1988 Survey (8) offers the most detailed comparison of the respondent's personal and family characteristics. Several questions were asked of dentists regarding reasons for leave of absence from dental practice and the length of time (in weeks) a leave was taken. For the sample under age 45, the most frequent reasons for a leave was personal illness for both male and female respondents, and child rearing by female dentists. As seen in Table 2, leave of absence from a dental career for purposes of child rearing is almost entirely a female dentist activity. About one-third of female dentists under age 45 years indicated leaves of absence for child rearing. The amount of leave time taken by female dentists is also greatest for this reason. As seen in Table 3, the rates per 100 weeks since graduation are relatively low for males and relatively constant across age groups. For females, the rates are higher than males and tend to increase through the age group of 40–49 years.

Choice of Practice Arrangement

Most dentists are owners or share in the ownership of their practices. A higher proportion of male respondents were practice owners in all three studies, as seen in Table 4. Also, as reported in the ADA 1988 Survey (8), male dentists were more likely to begin their practice activities as practice owners. Among dentists under age 45, about half of the women and 70% of the male respondents started as owners in the practice. About 89% of the men said they were currently practice owners, as compared to 68% of the women. As expected, the

Table 2. Percent of dentists indicating reasons for leave of absence from a dental career by type of leave and by dentists gender for respondents under age 45, 1988

Reason	Male	Female
Personal illness	9.2	13.4
Family illness	1.3	2.5
Child rearing	1.7	33.4
Family problems	0.8	1.3
Financial problems	0.8	1.0

SOURCE: American Dental Association, 1988 Survey of Dental Career Patterns, May, 1989, Table 9.

Table 3. Mean number of total weeks of leave and mean number of weeks leave of absence per 100 weeks since graduation from dental school for personal illness and child rearing combined by dentist age and dentist gender, 1988

Dentist age group	Total		Total per 100 weeks	
	Male	Female	Male	Female
<30	0.08	2.77	0.07	2.23
30-34	0.31	5.52	0.11	2.37
35-39	0.96	10.15	0.19	2.67
40-49	1.16	9.44	0.13	3.12
>50	2.18	22.45	0.13	1.50
TOTAL	1.31	7.57	0.13	2.44

SOURCE: American Dental Association, 1988 Survey of Dental Career Patterns, May, 1989, Table 11.

highest percent of dentists in non-ownership positions occur among recent graduates, as seen in Table 5. However, at all categories of years since graduation in the ADA 1988 Survey, the percent of females in non-ownership positions exceeds the corresponding proportion of males.

Also, males were more likely to be solo private practitioners. Among dentists younger than 45, 59% of male dentists and 39% of females indicated they were solo practitioner. Among owner dentists, staff sizes were larger for male than for female dentists. A larger proportion of male dentists employ hygienists compared with female practitioners.

These findings are consistent with other reports in the medical and dental literature, which concur that women are more likely to practice as employees in group practices, health maintenance organization, governmental agencies, and private institutions (6). Surveys of medical and dental students indicate that male and female students expect to practice in different settings. Male students expected to establish independent or group practices; female students expected salaried positions (13,14). Thus, differences in practice arrangement between male and female students are likely to persist.

Professional Work Effort

Considerable attention has been paid to the professional work effort of women dentists and physicians in the literature. The stereotype of female professionals having weak and unstable commitments to the work role was perhaps reinforced by earlier studies of women dentists. For example, Linn, in 1970 (15), reported that about half of females in private practice were working full time. Tillman and Horowitz, in 1983 (10), reported that of the 77% of actively practicing females, 49% worked full time. Rosner, in 1984 (16), reported 64% of the females surveyed worked full time.

However, the three recent studies reviewed in this paper suggest a far greater professional work effort and productivity of the woman dentist than previous reports. Whether this represents a true change in the women dentists' behavior over time, or is simply a more accurate picture of the situation using better research methods and survey techniques can be debated. Also, it is important to keep in mind that all studies to date have been cross-sectional in design. Cross-sectional studies are a snapshot view of the world and do not take into account cohort effects or societal changes over time. Also, previous cross-sectional studies

Table 4. Private practice status by gender as reported in three national surveys, Dolan & Lewis (1987), Wilson, et al. (1988) and the ADA 1988 Survey of Dental Career Patterns

	Dolan & Lewis		Wilson, et al.		ADA 1988 Survey[1]	
	male %	female %	male %	female %	male %	female %
Sole proprietor	52	39	57	40	59	44
Partner in complete partnership, shareholder in incorp. practice	24	25	34	36	30	24
Employed, on salary, commission, percentage, or associate basis	24	36	9	24	11	32

[1]Dentists under age 45 only.

Table 5. Percent of dentists in non-ownership positions in private practice, by dentist gender and by years since graduation, 1987

Years since graduation	male	female
<5	29.6	43.4
5-6	14.1	31.1
7-8	5.6	16.3
9-10	7.8	15.5
11-12	2.7	11.4
>13	3.0	10.4
All dentists	7.2	29.6

SOURCE: American Dental Association, 1988 Survey of Dental Career Patterns, May, 1989, Table 14.

were often of local or regional samples, contained small sample sizes and less than ideal response rates, and often did not include a male comparison group. The studies cited in this report represent vast improvements in methodology over the previous studies, and therefore, provide more reliable data.

The data summarized in Table 6 suggest similarities in time spent in practice activities by male and female dentists, rather than differences. Women, on average, work slightly fewer weeks per year, and slightly fewer hours per week. In addition, women spend slightly more time with each patient, with the net finding that women tend to see fewer patients per year, on average, than their male colleagues. The ADA 1988 Survey (8) reported that male dentists spend slightly less time than the female dentists in diagnosis and preventive procedure groups. Wilson, et al. (7) reported the women were more likely to see a greater percentage of patients who were of minority groups, had handicapping conditions, low income, and received public assistance for dental care. Mean dental procedure fees show little difference by gender (8).

Bivariate and multivariate analyses suggest that the dentist's work effort (measured as the number of hours worked per week and the number of weeks worked per year) is associated with the dentist's ownership status in the practice. Dolan and Lewis (6) reported similar work effort for males and females when they are sole owners of their dental practices, with a difference of only 2.1 hours worked. However, for employed males and females, there is a seven hour difference in favor of the males. Single, divorced, and separated males and females worked about the same number of hours per week. Married women, however, worked 5.8 hours less per week than their married male counterparts. Wilson, Branch & Niessen (7) in multivariate analyses, reported that when controlling for age, year of graduation, and selected practice and patient characteristics, gender was significant but not a substantial variable in predicting productivity.

Gender Wage Gap

The Bureau of Labor Statistics, US Dept. of Labor, has developed an extensive set of labor market data to analyze the experience of working women. Despite the many changes in societal, marital, and family patterns, there is a wide disparity in the median earnings of women and men, and the basic ratio of women's to men's earnings has not changed much over time (17–19). In 1939, median earnings for women working full time were 58% of the median earnings for men. This so called "gender wage gap" is consistent at every level of

Table 6. Practice productivity variables by gender as reported in two surveys, Dolan & Lewis (1987), and the ADA 1988 Survey of Dental Career Patterns

	Dolan & Lewis		ADA 1988 Survey[1]	
	males	females	males	females
Mean number of weeks worked per year	na	na	48.2	46.7
Median number of weeks worked per year	na	na	49.0	49.0
Mean hours worked per week	42.4	38.3	43.8	41.3
Mode hours worked per week	40.0	40.0	na	na
Mean length of a patient appointment (min.)	na	na	42.2	44.9

[1]Dentists under age 45 only.

Table 7. Mean net income for private practice dentistry by gender and by general practitioners vs. specialists, and the ratio of female/male income as reported in two surveys, Dolan & Lewis (1987), and the ADA 1988 Survey of Dental Career Patterns

	Dolan & Lewis			ADA 1988 Survey[1]		
	Male	Female	female: male ratio	Male	Female	female: male ratio
General Practitioners	na	na	na	$72179	$44695	61.9%
Specialists	na	na	na	$103341	$59373	57.5%
Total	$43,902	$33,123	75.4%	$75441	$46124	61.1%

[1]Dentists under age 45 only.

educational achievement including high paying occupations.

Dolan and Lewis (6) reported that on average, women dentists earned 75.4% of male pretax income from the private practice, administration, or teaching of dentistry, with a mean annual difference of almost $10,000. Males consistently earned greater income from the private practice of dentistry, regardless of ownership status. The smallest difference ($6,740) was found for sole proprietors, and the largest difference ($17,984) for dentists who were partners or shareholders in their dental practices. In multivariate analysis predicting practice income, gender remained a significant variable after controlling for other variables such as graduation year, hours worked per week, and practice ownership status.

These findings are supported by the ADA 1988 Survey data (8). For respondents under age 45 in 1987, the average earnings of female private practicing dentists was about 61.1% of the average earnings of male practitioners. Average earning among female practitioners was $46,120 compared to $75,440 for males. Female specialists earn approximately 57.5% of the male income, on average. Income disparity between male and female practitioners is associated with age. The smallest disparity was found in the 35–39 age group, where women earned 76% of the male average. Unfortunately, multivariate analyses predicting income after controlling for age, ownership status and personal characteristics were not reported in the ADA 1988 Survey report.

Discussion

The three national studies comparing gender trends in dental practice patterns report very similar findings in the areas of dentist's characteristics, practice arrangements, work effort and practice income. These consistencies suggest an accurate aggregate description of women dentists in the 1980's. Should we, as members of the dental profession, be concerned about gender inequities in practice ownership status and income derived from the practice of dentistry? Should we, as members of society, be concerned about these inequities, or about the changing gender roles and family and professional responsibilities? Will these inequities persist without intervention? Are interventions indicated? What implications do these findings have for the future of the dental profession?

In the United States, dental services are delivered in a free-market economy, most commonly in a fee for service mode. Patients are consumers, and buy or contract for services from the dentists of their choice. Dentists determine fees, hours of operation, and other practice policies. So why should we be concerned about the gender wage gap or disparity in practice ownership status between male and female dentists? Economists might tell us that in the end, market forces will equalize disparities. But will they? And in which direction, and at whose expense? Women dentists are a relatively new minority group in the dental profession. For the most part, young women dentists do not have a group of senior female mentors to encourage and foster professional development during or after dental school. Rather, women dentists rely on predominantly male professional colleagues, bankers, practice brokers and realtors and to serve as mentors, or to assist in the establishment of dental practices. Perhaps bias and discrimination has hindered the success of women dentists, in terms of practice ownership and income.

The dental profession, and society in general, has witnessed great changes in the past two decades: advancements in the biological and technological management of oral diseases, great expansion in dental school enrollment, and the in-

creased receptivity of the dental profession to women as students, and to a lesser degree as colleagues and leaders in organized dentistry and dental education. Women have made great strides in all areas of the work force. Yet issues of equal pay for equal work, availability of adequate child care, and the successful combining of family and work roles remain a challenge to all working women. Research suggests a convergence of practice patterns of male and female recent dental graduates, most notably in the productivity measures, and least notably in income. As optimists, we may expect continued convergence and equity resulting from further advances of women in dentistry and society in general. However, it is doubtful that inequities will be negated without purposeful interventions on the individual, professional, and societal level. Minority faculty development programs, formal and informal mentoring systems, symposium, and additional research are essential to identify and monitor issues related to women dentists. Action plans to facilitate equity and to accomodate the working women and mother in today's workplace are needed. Men and women already in positions of leadership need to facilitate the development of future female role models and leaders, for the future good of our profession.

Summary

This paper reviews three recent reports of national gender trends in dental practice patterns. Although the three independent cross-sectional studies were conducted at different points in time, used different sampling strategies, and used similar but independent survey instruments, findings were consistent across studies. In summary:

- Women dentists are less likely to be married and have fewer children.
- Women are more likely to assume child rearing and household responsibilities.
- Women are less likely to be practice owners.
- Women worked slightly fewer hours per week and weeks per year, and were more likely to take a leave of absence for illness or child rearing. However, women dentists demonstrate a far greater professional work commitment than was previously reported in the literature.
- Women earn significantly less income from the practice of dentistry, even after controlling for age, practice ownership, hours worked per week, and other personal characteristics.
- The most current "Gender Wage Gap" estimates range from 57.7% for specialists to 75.4% for general practitioners (8). △

References

1. Council on Dental Education, Division of Educational Measurement. Annual Report on Dental Education 1985–6. Chicago, IL: American Dental Association.
2. First-year enrollments rise. ADA News March 4, 1991. Chicago, IL: American Dental Association.
3. Inglehart, J.K., Datawatch: trends in health personnel. Health Affairs, 5(4): 128–137, 1986.
4. Women, young join leadership ranks. ADA News January 21, 1991. Chicago, IL: American Dental Association.
5. Neidle, E., President's Address. Journal of Dental Education, 50(7):380–382, July, 1986.
6. Dolan, T.A., Lewis, C.E., Gender trends in the career patterns of recent dental graduates. Journal of Dental Education, 11:639–645, November 1987.
7. Wilson, A.A., Branch, L.G., Niessen, L.C., Practice patterns of male and female dentists. Journal of the American Dental Association, 116:173–177, February 1988.
8. Bureau of Economic and Behavioral Research, Council on Dental Practice, American Dental Association. A comparative study of male and female dental practice patterns. May 1989.
9. Bielby, D.D., Bielby, W.T., Work commitment, sex-role attitudes, and women's employment. Am Soc Rev, 49: 234–247, 1984.
10. Tillman, R.S., Horowitz, S.L., Practice patterns of recent female dental graduates. JADA, 107 (1):32–35, July 1983.
11. Cohen, E.D., Korper, S.P., Women in medicine: a survey of professional activities, career interruptions, and conflict resolutions. Trends in Career Patterns. Con Med, 40(3): 195–200, 1976.
12. Mitchell, J.B., Why do women physicians work fewer hours than men physicians? Inquiry 21:361–368, 1984.
13. Kutner, N.G., Brogan, D.R., A comparison of the practice orientations of women and men students at two medical schools. J Am Med Wom Assoc, 35:80–86, 1980.
14. Solomon, E., Pait, C., Women dental students exhibit different career and income expectations. J Dent Educ, 44(10):619–620, September 1980.
15. Linn, E.L., Professional activities of women dentists. JADA 81:1383–1387, December, 1970.
16. Rosner, J.F., career patterns of female and male dentists. J Dent Pract Adm, 1(2):89–94, April-June 1984.
17. Norwood, J.L., The male-female earnings gap: a review of employment and earnings issues. Washington, D.C.: U.S. Department of Labor, Bureau of Labor Statistics, Report 673, September 1982.
18. Norwood, J.L., Working women and public policy. Washington, D.C.: U.S. Department of Labor, Bureau of Labor Statistics, Report 710, August 1984.
19. Mellor, E.F., Investigating the differences in weekly earnings of women and men. Monthly Labor Review, June: 17–28, 1984.

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Symposium: Women Dentists

MINORITY FEMALE DENTISTS: A SYNOPSIS

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For more than a decade, dental schools have witnessed significant changes in student enrollment. The most evident change is in the number of first-year dental enrollees. However, dental enrollment also has varied with respect to gender and ethnic composition. In 1978, enrollment peaked with 6301 entering students.[1] By 1990, the first-year class was comprised of 4001 students.[2] Despite the decline in overall dental enrollment, the proportion of female and ethnic minority students has increased in recent years.[1] Nearly ten years ago, females comprised about 17% of first-year enrollment.[3] By the late 1980s, these individuals represented more than one-third of the entering class. In addition, in 1989 minority first-year enrollment was 30%.[1,4,5] Although these enrollment trends are encouraging, it is important to note that Asians represent over one-half of minority enrollment, while student enrollment from other ethnic groups remains relatively low.[1] Therefore, minority recruitment and retention strategies must be enhanced in order to secure a greater number of qualified minority dental students, particularly those who are from Afro-American, American Indian and Hispanic populations.

Shelia S. Price

Many times, minority faculty pose as role models for dental aspirants; however, a more viable approach to minority student mentorships may be the development of a close-knit communicative network between students, faculty and minority alumni. To develop this relationship, it is essential to seek prospective participants among the population of minority dentists and assess these individuals' perspective about dentistry as a career.

This pilot study was initiated to identify a group of minority female dentists and gain insight into these individuals' level of satisfaction with dentistry as a career by using educational indebtedness and annual income as variables.

Methods

In the summer of 1989, a list of 2000 minority female dentists was requested from the American Dental Association (ADA). The request had no restriction as to the dentists' age, number of years in dental practice or practice location. However, only 756 names and addresses of ADA and non-ADA members were available for distribution. A random sample of 500 of these individuals was selected for this pilot study.

A 31-item questionnaire was designed to collect descriptive data about minority female dentists. The inquiries were arranged in yes/no response and multiple choice formats. Also, participants were encouraged to record additional remarks in a comment section. The specific purposes of the study were to examine minority female dentists' employment status, practice activity, educational indebtedness, annual income, and satisfaction with practice arrangement and dentistry as a career.

In July 1989, the questionnaire along with a cover letter of explanation and a stamped, addressed envelope were mailed to the sample population of minority female dentists. The study was conducted via a single mailing and did not include a telephone follow-up. Returned surveys were analyzed by a comparison of means, chi-square procedures and Pearson correlations.

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Results

In August 1989, 190 usable surveys (38%) were returned from the single mailing. The respondents were age 25–59, with a mean of 30. The majority were less than 30 years of age. Only five individuals were age 40 or above (Figure 1).

These individuals were either Afro-American, Asian, Hispanic or Native American. However, 75% of the respondents were equally representative of Asian or Afro-American dentists (Figure 2).

Survey participants were from diverse areas in the United States. The respondents reported practice locations in thirty-six states and the District of Columbia. Several states were represented by as few as one dentist, while twenty-four respondents reported practice locations in California.

Table 1 shows the distribution of the respondents by graduation year. With the exception of one individual, these dentists completed dental school in the 1980s. Furthermore, 96% of these women graduated from dental school between 1986 and 1988.

Nearly all of the respondents are general dentists. One-fifth completed a graduate practice residency prior to practice initiation, while only 8% pursued specialty training. The greatest number of specialists are orthodontists and pediatric dentists. Both of these specialty areas are represented by five dentists. Table 2 illustrates the distribution of these dentists by employment area. The majority are engaging in private practice.

These dentists vary with respect to practice arrangement (Figure 3). 43% of the private practitioners

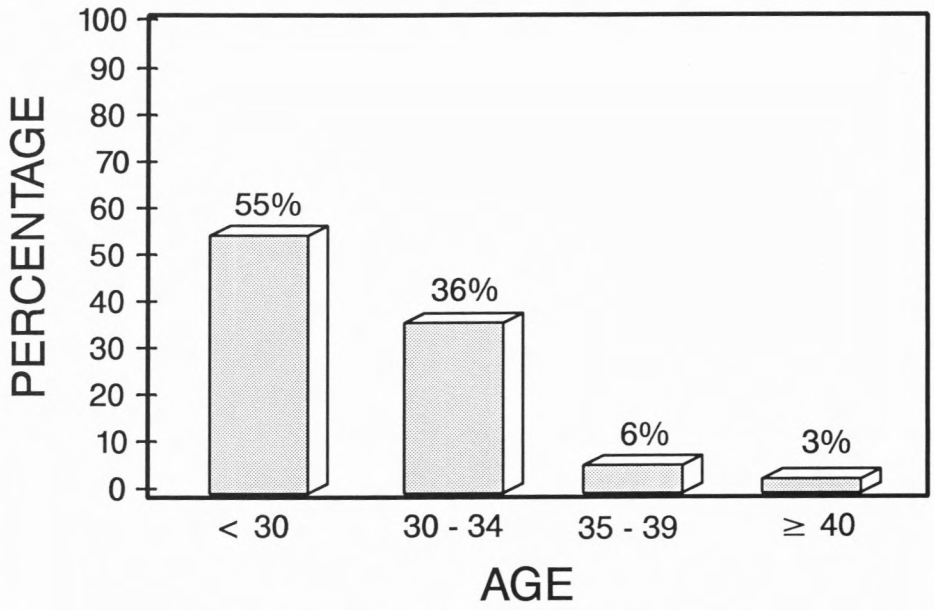

Figure 1. Distribution by age, n = 190.

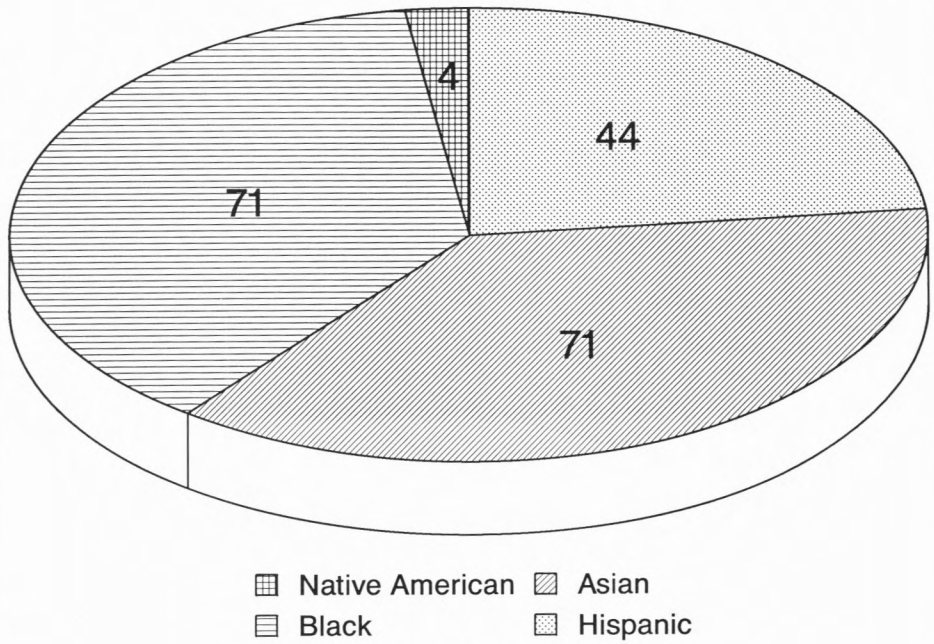

Figure 2. Distribution by ethnicity, n = 190.

Table 1. Distribution by year of dental school graduation, n = 190

Year	Percentage
1988	21
1987	38
1986	37
1985 or before	04

engage in an associate practice. One-fifth are solo practitioners. Nearly one-fourth of the respondents engage in a partnership. Of the thirty-six respondents who have dental spouses, eleven of these couples are in a partnership.

Figure 4 is a graph showing the level of educational debt these dentists incurred while attending dental school. Debt levels were reported in one of four categories which ranged from less than $5,000 to over $35,000. 57% have debt less than $35,000. When indebtedness was examined with respect to practice arrangement, those dentists who have debt less than $20,000

Table 2. Distribution by employment area, n = 190

Employment Area	Percentage
Private practice	74
Public health	12
Academic	10
Military	01
No response	03

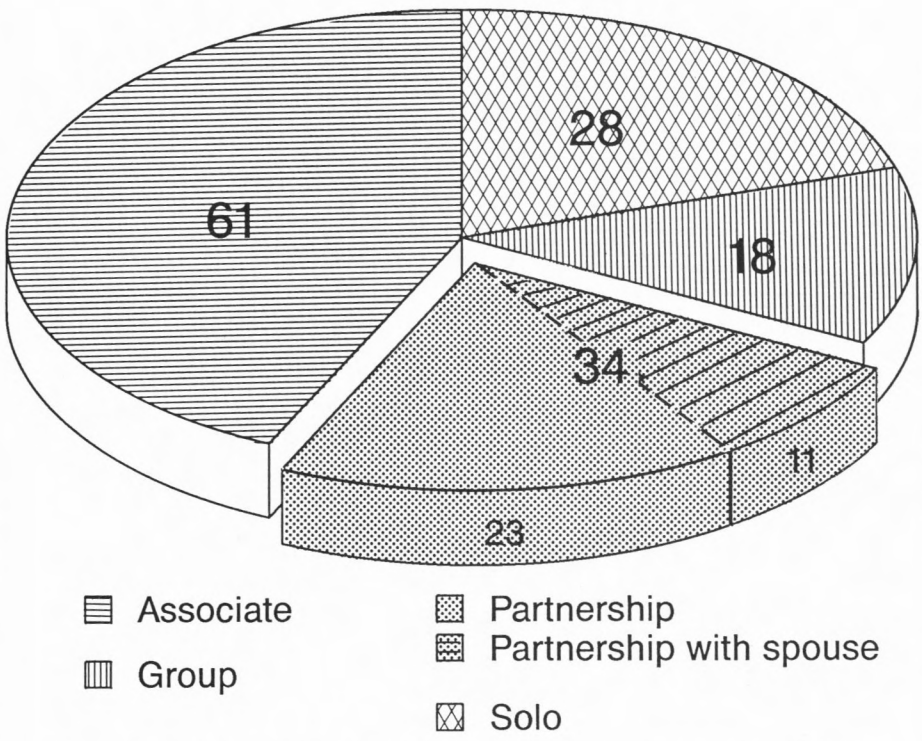

Figure 3. Distribution of private practitioners by practice arrangement, n = 141.

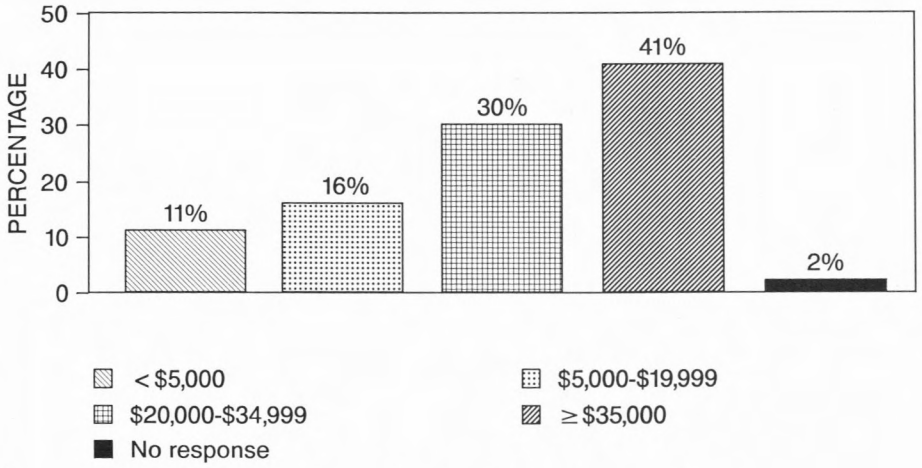

Figure 4. Dental education indebtedness, n = 190.

were more likely to engage in solo practice arrangements.

The respondents report gross annual incomes from less than $25,000 to over $200,000 (Table 3). The majority earn less than $50,000 annually. As expected, gross annual income varies according to the amount of time devoted to dental practice each week. Of the 45% who work 40-hours or more each week, only two individuals earn more than $50,000 annually.

Figure 5 illustrates these dentists' level of satisfaction with the dental profession and practice arrangement. Satisfaction was described in one of four categories—very satisfied, somewhat satisfied, somewhat unsatisfied and very unsatisfied. 29% are very satisfied with their practice arrangement, while 48% are somewhat satisfied.

When asked to rank professional satisfaction, 88% reported in either of the two satisfied categories. When dental education indebtedness and level of professional satisfaction were examined, no correlation was demonstrated. Also, contrary to popular opinion, no correlation exists between income and professional satisfaction. This finding shows that, in general, these dentists are satisfied with their career and practice arrangement.

Table 3. Gross annual income, n = 190

Gross Income	Percentage
<$25,000	17
$25,000-$49,999	53
$50,000-$99,999	17
$100,000-$149,999	02
$150,000-$199,999	03
$200,000 or more	01
No response	07

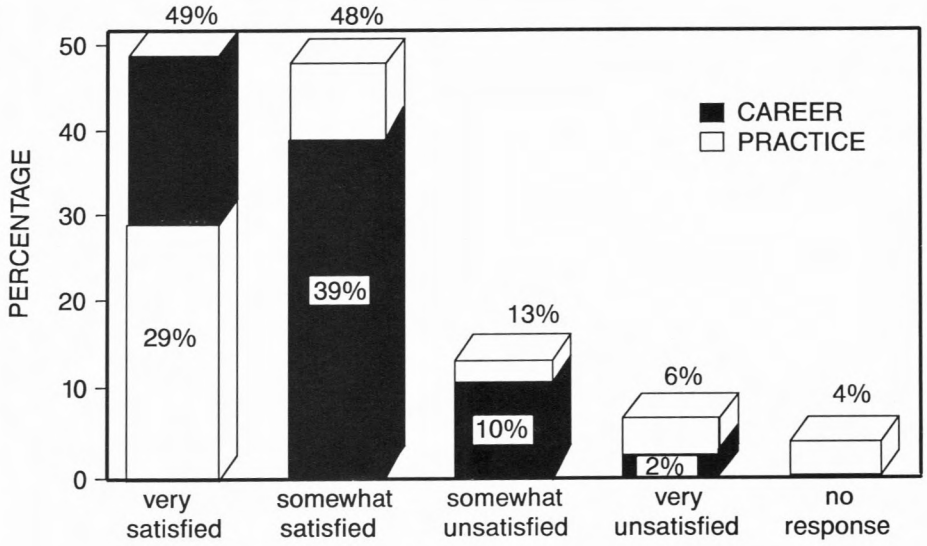

Figure 5. Level of satisfaction with practice arrangement and dental career.

For those who reported any level of dissatisfaction with dentistry as a career or practice arrangement, the remarks in the comment section were scrutinized. Interestingly, all dissatisfied associate practitioners expressed unfavorable comments about the type of on-the-job duties they perform. A few of these dentists wrote:

> "After almost 2-years of employment I am still doing hygiene 50% of my work hours."
>
> "In order to survive, I'm doing mostly hygiene . . . this isn't what I went to dental school for."
>
> "I currently work as a hygienist doing some dentistry."

Discussion

These dentists' level of satisfaction with dentistry as a career and practice arrangement is a positive point to ponder. However, the results of this study are limited by two important factors: size of the sample population and response rate. To ensure meaningful results, a future study must include a larger population of minority female dentists. In addition to the American Dental Association, other professional organizations and dental schools could be a source for names and addresses of prospective study participants. As for the latter factor, it is not unreasonable to assume that dentists who did not respond may have abstained due to a lack of interest in the study or professional discontentment. At any rate, a more aggressive approach, such as a second mailing or telephone follow-up is needed to

improve the number of responses.

The majority of the survey participants are recent graduates, general dentists and private practitioners. These individuals are generally young in age. Only 3% are age 40 or beyond. These young dentists are primarily engaging in private practice. 43% of these females work as associates, while 20% are solo practitioners. Of particular interest is the number who engage in a partnership. Thirty-four of the private practitioners are in a partnership and eleven of these individuals engage in a partnership with a spouse. The latter finding is similar to a 1988 study of female dentists.[6]

This study revealed that in general, these young minority female dentists are satisfied with their dental careers and present practice arrangement. This finding is consistent with a 1989 study of dental alumni by Lancaster and Grogono.[7]

In 1989, dental graduates' average educational debt exceeded $40,000.[5] Over one-fourth of these recent graduates have debt less than $20,000, while 41% have $35,000 or greater debt. A previous study found that educational debt and income are primary factors which may impede career satisfaction.[7] However, this study revealed no correlation between satisfaction with the profession and educational debt or professional satisfaction and income. This indicates that regardless of factors such as large debt and income, these dentists maintain a positive opinion on dentistry as a career. Instead, for this group, it appears that concerns about debt and income are secondary to discontentment with on-the-job expectations, such as assuming dental hygiene responsibilities.

Dental schools may capitalize on graduates who display enthusiasm about a career in dentistry by inviting their participation in programs which encourage mentorships among students and practitioners. Minority student matriculation can be enhanced by minority practitioners' active involvement in mentorships. The following recommendations may strengthen non-academic support for minority dental students.

1. Dental schools should identify minority alumni and/or local practitioners who will participate in a student mentorship program.
2. Dental educators should strive to promote the concept of mentors/role models by developing a program whereby students periodically engage in a dialogue with minority dentists about career opportunities. Ideally, this informational exchange should occur soon after students initiate the dental program.
3. When possible, dental schools should provide remote-site opportunities which encourage interaction between minority dentists and students in a professional setting.

Summary

This pilot study identified a group of minority female dentists who are relatively young to the dental profession. In general, these individuals are enthusiastic about a career in dentistry. Career contentment is evinced by the reported level of satisfaction with the dental profession, irrespective of educational indebtedness or annual income. Of those who are dissatisfied, it seems as if income and debt are not the primary areas of concern. These findings provide an impetus for a more comprehensive investigation of this emerging population of dentists.

Acknowledgment

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References

1. Division of Education. DES Data Update. Chicago, American Dental Association, February 1, 1990.
2. Department of Educational Surveys. 1990-91 Annual Report on Dental Education. Chicago, American Dental Association, 1990.
3. Waldman, H.B., Some Consequences of the Increasing Number of Female American Dentists, Journal of the American Dental Association, 103:563–567, October 1981.
4. Department of Educational Surveys. 1989-90 Annual Report on Dental Education. Chicago, American Dental Association, 1989.
5. Waldman, H.B., Dental School Demographics: More Than Just Decreases in the Overall Number of Students, Journal of the American College of Dentists, 57:22–28, Winter 1990.
6. Price, S.S., A Profile of Women Dentists, Journal of the American Dental Association, 120:403–407, April 1990.
7. Lancaster, D.M., and Grogono, A.L., Career Choice and Satisfaction: A Survey of Dental School Alumni, Journal of the American College of Dentists, 57:29–35, Winter 1990.

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FEMALE DENTAL STUDENTS: IDENTIFYING AND ADDRESSING NEEDS

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Women in dental schools, because of their sex, exhibit the dynamics of what will happen to a different one in an organization, as described by Rosabeth Moss Kanter and Barry A. Stein. In their "Tale of 'O': On Being Different in an Organization", they describe two kinds of characters. The people of an organization found in very large numbers (the X's) and the few people who are different (the O's), because they are scarce.

What designates people as X's or O's is just how common they are in a particular place. From then on they play a role that may have little to do with what they are really like as people. The O's seem different, just because there are so few of them compared to the X's.

In the Beginning and the Decades Prior to the '60's

Imagine a group of 25 or 30 or even 60, "X's". In this group the "O" stands out. "O" is eye-catching, "O" gets more of our awareness and attention than any one of the "X's". We put the spotlight on "O" and are distracted by the novelty aspect of "O". Up through the mid '60's a similar case was exhibited in dental school enrollment. As long as the number of "O's" (women) remained one or two percent, their treatment was characterized by:

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- being taunted by the male students
- being kidded
- attempts to embarrass
- acceptance of a lesser standard of performance in technical (preclinical) work by those in command
- being overindulged by faculty to assist these students
- being protected by one or two of the "X's" (the male students) against other "X's".

There tended to be a paternalistic or a brother-sister relationship which existed. There was little attempt to "demean or harass" because there was no "need" to. Women (O's) posed no threat to the "X's" (men). Even if a woman did survive the entire 4 years, there was no serious thought given to her conducting the full professional working life of a "real dentist" as would the males.

The literature references no formal support systems existing during this period. More likely, women who came through this generation experienced informal support systems as follows:

—relying heavily on the encouragement of the one or two women predecessors, perhaps even vicariously reliving their experiences and reading of such heroines in the annals of the dental school or viewing the graduation photos with the females always on the first or second row. A sense of motivation was generated through such vicarious experiences.

—counseling and encouragement by the mothers who admired the courage of their daughters and perhaps even the understanding of fathers who suggested alternatives to the pursuit of a dental education to their daughters.

—self-inquiry as to the motivation for pursuing dentistry. Perhaps a deep sense of the pioneering spirit, a sense of adventure and the desire to be different was the motivator.

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—a sense of fulfillment engendered by following their father's vocation.

Societal opinion stereotyped women seeking entry into this male-dominated profession as either looking for a husband or being less feminine. The struggle to disprove either one of these mind sets, whether consciously or subconsciously, always existed.

According to Ross and Kanter, as more "O's" come into a group, a different set of dynamics emerges. Little difference in treatment of women is seen on an individual basis, as long as the ground rules are set by the X's, although there are more O's (women) amongst the X's. In time however, within their internal framework, the O's (women) become competitive with one another and fail to give to each other any support.

The Emergence of a Recognizable Minority

Up to the mid 70's, with only a few women in dental classes (about 7% or 8%—certainly under 10%), dentistry exhibited the same type group behavior. In the admissions cycle, schools attempted to select more than one woman into a class so there ostensibly would be comraderie.

Several events of history altered dramatically the number of women in our health profession schools. First, there was the women's movement which had firmly taken hold with more women escalating to higher occupational levels in the workplace.

Secondly, the passage of the Health Manpower Training Act of the mid-sixties which targeted special sectors previously underrepresented: one of these targeted groups was women.

Third, the affirmative action mandates, requiring equitable treatment of women with men in all aspects of education and work, was highly emphasized and enforced.

Thus, although the number of women in entering classes increased, on the average their overall percentages remained meagre. Ironically, at a time when women were being recruited in ever greater numbers to pursue careers in science, obstacles in their advancement still remained.

Comparing the Ross and Kanter model with the phenomenon in dental schools, what actually happened, was several-fold.

1. The O's (women) began to distrust one another, because of their competitiveness.
2. There were misinterpretations about the relationship of any O (woman) with any X (man).
3. The X's (men) tended to stereotype the O's; and while this was going on, each O attempted to seek a separate identity, further widening the chasm with other female classmates.

Undoubtedly there were many coping mechanisms on an individual basis, however the presence of a well structured support system to help ameliorate the problems of women still did not exist. Their ill treatment took many forms such as verbal harassment, insulting remarks, treatment as second-class citizens, not being taken as seriously as their male classmates and discrimination by male students or faculty. Ironically, selection of women who showed higher levels of knowledge and expertise resulted in accusations of them being "difficult", "vocal", and "having domineering personalities".

The Period When Female Enrollments Make a Difference

Recruitment of women continued with fervor into and through the '80's. National attrition of the applicant pool was stemmed in its downturn only by the demonstrable increased presence of women. Today we witness female representation in the 30% and upward range in almost all of our dental schools.

This 30% figure is very significant, because it appears to be the level when the O's (women) have become fairly distributed throughout an "X" society. It has now become a normalized phenomena "once the number of women reached the 30 percent level", as stated by Kauffman of Ohio State speaking of her American Astronomical Society, "they (women) get treated as scientists, rather than as women".

The increase in numbers of women causes one to focus more on the problems which exist and the need for support systems. To explore these problems and perceptions of women enrolled in dental school, four separate focus groups were identified. Students currently enrolled and representing all class levels were selected and interviewed.

In each instance, there was no formal or structured program of support activities within their dental school. However, although there were none, there were some adaptive measures which had been undertaken. Interestingly, attitudes of women seem to be tempered by three factors:

1. the generation in which they have grown up,
2. the economic forces requiring second income families,
3. the commitment of women to self fulfillment, i.e., to "be all that one can be".

None were organized into a formal administrative unit; they were not coordinated by any single individual and a standard protocol for handling such situations was not apparent.

The problems identified fall into several categories:

1. **Educational issues and matters relating to faculty interaction.**
   —Lack of uniformity and enforcement of school issues.

—Grading and evaluation of female students with parity.
—Issues relating to patient care and clinical performance.
—Attitudes of male faculty members.
—Female classmate competitiveness.
—Disproportionate physical facilities for women (i.e., restrooms and locker rooms).
—Lack of incentives provided through female role models.
—Absence of faculty and administrative support resulting from the lack of female support groups, the absence of female faculty and no/few women in levels which effect policy.

2. **Psychological and emotional adaptations used by women to better adapt to the expectations of society and themselves.**
—Self-imposed guilt resulting from categorization as a "superwoman" and resulting expectations of performance from others.
—Compromises of household and marital duties.
—Role identity (i.e., the professional *vs.* the woman).
—Harassment issues.
—Lack of emotional and psychological support from family; absence of female network systems.
—Life style adaptations and services which ameliorate the stress and loss of time propagated by dental school study.
—Need for self-fulfillment and the conflicting view of society as a high achiever.
3. **Financial issues and concerns about financing dental school**
—Perceptions about differences in packaging of financial aid awards which may not be as liberally interpreted as for male students.
—Placement and job issues, including differential salaries and positions.
—Child care availability and homemaking-related expenses.

There were a number of miscellaneous concerns such as domination of leadership and responsible positions in the dental school class held by males, and the lack of uniformity in enforcement of dress codes for males.

Identified in all of the focus groups were first and foremost: the need to develop increased faculty role models and to increase representation of women at the administrative levels where policy is made and where their influence is critically important.

Further areas which need to be addressed include:

1. Development and distribution of grievance procedures to deal with charges of sexual harassment.
2. Insuring that the equitable treatment of married female students is the same as male students with comparable extenuating circumstances.
3. Development of policies regarding maternity leave and personal leaves of absence.
4. Equitable adjudication of child care in financial aid policies in cases where the mother/relative, receiving no remuneration, assumes responsibility for the child.
5. Eradication of the "chilly climate" which still exists in some institutions; identifying and eliminating areas of subtle discrimination.
7. Insuring that the numbers of women in educational programs remain at the 30% or above level.
8. Providing meeting rooms and providing space in newsletters and other publications to discuss issues affecting women and matters of minority groups.
9. Supporting the development of role models of women and underrepresented minority groups within the dental community.
10. Encouraging institutions to accommodate the professional needs of both partners in married couples.
11. Increasing the flow of underrepresented groups into graduate specialty and general practice residency programs.

Conclusion

The awkwardness that is generated by transitional times in a pluralistic society, when a few people of one kind join a group of another kind is demonstrated in the story of women entering the dental profession.

Cognitive psychology holds that the fact of an object's distinctiveness heightens awareness of it, exaggerates the difference between it and the more common objects. Although X-O situations may never completely disappear in dentistry, the numbers of females in the profession may now have become balanced sufficiently so that the "O's" no longer seem unusual.

Nevertheless because men and women are different, they will behave differently, both in their adaptive as well as maladaptive behavior. Perhaps now is the time, when carefully planned and substantive support systems should be developed, to assist both women and men to favorably negotiate our dental educations programs. Δ

Bibliography

1. Kanter, Rosabeth and Stein, Barry. *"A Tale of O: On Being Different in an Organization".*
2. Kanter, Rosabeth Moss, *Men and Women of the Corporation,* Basic Books, Inc., New York, New York, 1977.
3. American Dental Association, *Trend Analysis—1989–1990*
4. Ivancevich and Donnelly; *Organizations,* 3rd Edition, Business Publications, Inc. Dallas, Texas, 1979.

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Symposium: Women Dentists

WOMEN IN ACADEMIC DENTISTRY: A PROFILE

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The most significant demographic trend in dental school enrollment over the past twenty years has been the rapid influx of women. As these women graduate and begin their careers in Dentistry, many choose dental education as their livelihood. This investigation will show how the number of women faculty has grown over the past twenty years, but the emphasis will be on the current state of women in academic dentistry and their progress through the academic system.

There has been significant growth in the number of females in dental school faculties. Since 1970, the number of women who are members of a clinical science faculty has more than tripled (Fig. 1). Women in clinical sciences were selected because they had the most reliable historical information available. The trend is reflective of women in all phases of dental education. Between 1970 and 1980, the number of women in the clinical sciences increased slowly from 357 to 594. In the next decade, however, the growth rate increased and the number of women more than doubled. This rapid increase mirrored the trend in dental students a decade earlier when the number of women in the first-year class in dental school jumped from 100 in 1970 to 1,194 in 1980. The proportion of female dental students continues to climb; 38.4 percent of the first-year class last year (academic year 1990-91) were women. The increasing proportion of female dental students is a sure sign that women will assume a larger share of dental school faculty positions in the future.

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The information on women in dental schools comes from the American Association of Dental School's faculty roster; the Survey of Dental Educators (SODE). This roster has been updated annually since 1982 and contains information on demographic as well as academic characteristics of dental school faculty. The information on "current" faculty is derived from the SODE file for academic year 1990-91. We will begin investigating the current status of women in dental school by showing some demographic information. Figure 2 shows dental school faculty by ethnic status and gender. Women make up a larger proportion of faculty among under-represented racial/ethnic minority groups; women comprise 30 percent of Black and Hispanic faculty and 26 percent of faculty who are of American Indian or Alaskan Native extraction. The age profile of women faculty is also much different than men's (Fig. 3). Generally, women faculty are much younger than their male counterparts. Forty-two percent of male faculty are at least fifty years old compared to only 17 percent of women in this age group. Conversely, 55 percent of women are less than 40 years old compared to only 27 percent of men.

Several variables help explain women's academic roles in the dental school. For example, women are more likely to work full-time than men (Fig. 4). Thirty-six percent of male faculty work full-time while 44 percent of women are working full-time. The relatively high percentage of women who are full-time is an indicator that a significant proportion of women intend to make dental education their ca-

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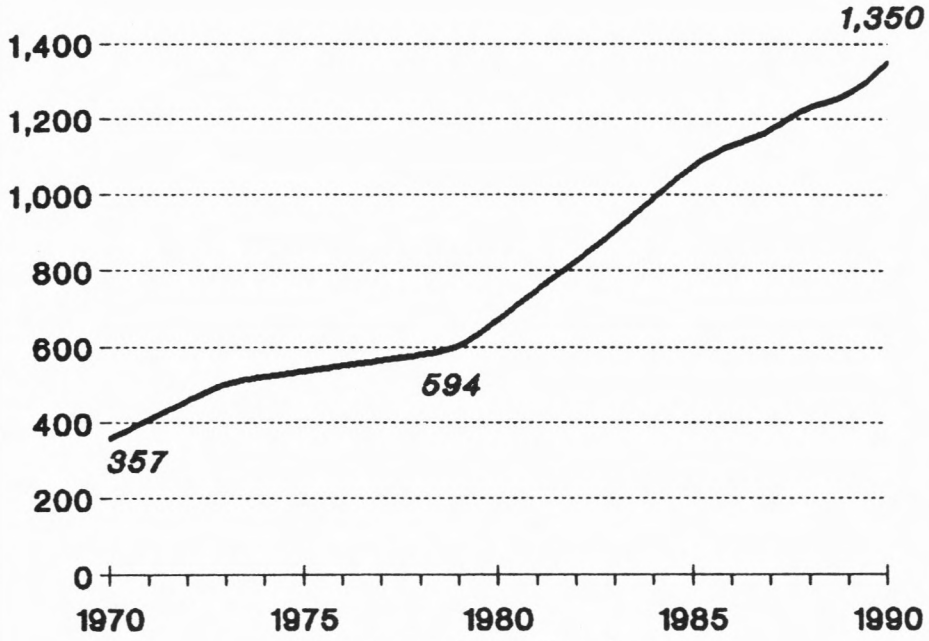

Figure 1. Female Clinical Faculty.

reer. By looking at gender and primary appointment, we get a better idea of the woman's role in the dental school (Fig. 5). In this case, one is struck by the similarity of men and women. If you include the women who are involved in allied dental education with those in clinical education, the result is a very similar pattern between the sexes.

Our next area of investigation is the representation of women in the eight clinical specialty areas accredited by the Commission on Dental Accreditation (Fig. 6). Here the patterns are quite different. Women have a relatively high level of representation in Pediatric Dentistry, Periodontics, and Dental Public Health. Conversely, the current representation of women in Oral and Maxillofacial Surgery, Orthodontics, and Endodontics is relatively low. To see if this profile is likely to change in the future, we next compared the percentage of women in each of these areas to the percentage of women currently in postdoctoral training programs (Fig. 7). The percentage of women in specialty training is higher than their current representation on faculty in each area. If the women representation in specialty training is an indicator of future faculty status, we should continue to see a high concentration of women in Pediatric Dentistry and Dental Public Health. In addition, we should see the concentration of women faculty in Oral Pathology, Orthodontics and Endodontics increasing in the near future.

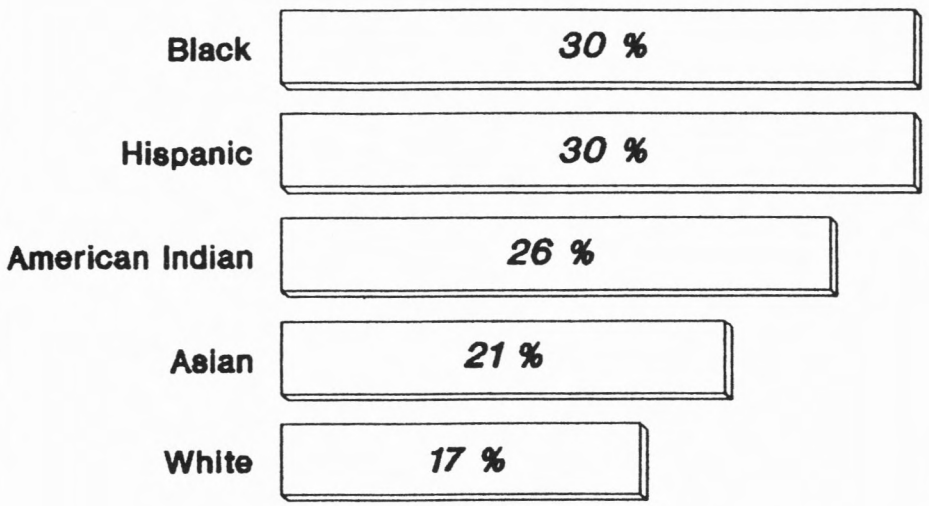

Figure 2. Female Faculty by Racial/Ethnic Group Percent of Group.

This section looks at the issue of equality between men and women faculty in the dental schools. When the genders are compared by academic rank, some differences emerge (Fig. 8). Thirty percent of male faculty are found among the tenured ranks (Professor and Associate Professor) compared to only 17 percent of women. In order to discover any reasons for the difference, we conducted an analysis that looks at academic promotion to see if there are differences between men and women[1]. We designed a data set that would allow us to evaluate the progress of dental school faculty on an equal basis, irrespective of gender. To accomplish this task, we developed a series of cohorts. These cohorts were formed by grouping individuals with similar educational back-

[1]Details of this analysis can be found in the article entitled *Promotion and Appointment to Administrative Positions of Dental School Faculty by Gender, Journal of Dental Education*, Volume 54, Number 8, pp. 530–534.

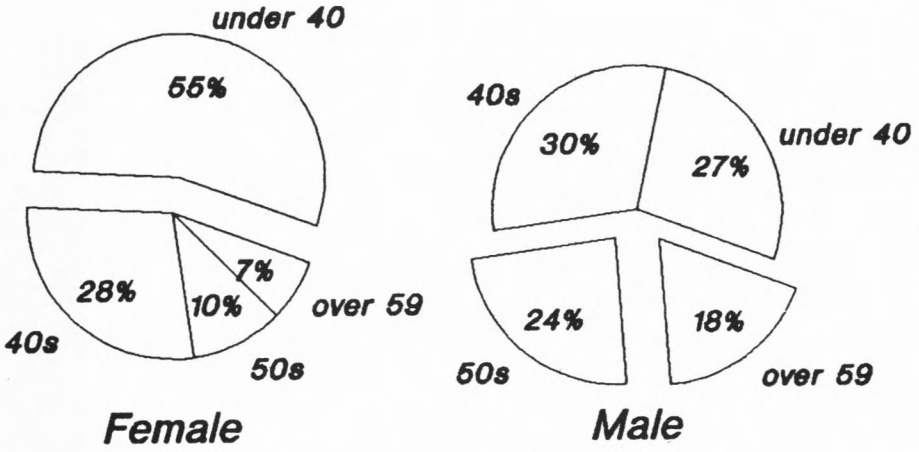

Figure 3. Age Group by Gender, Academic Year 1990–91.

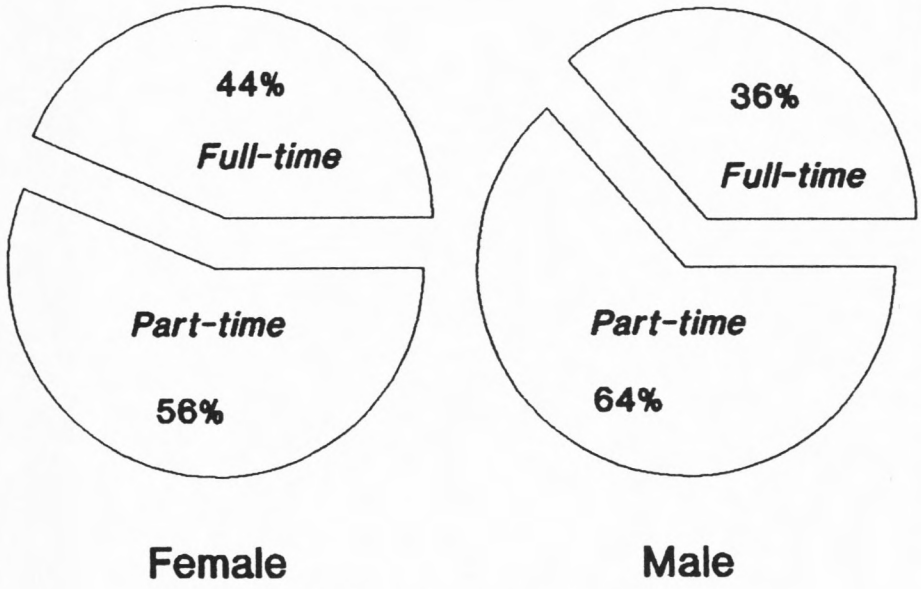

Figure 4. Work Status by Gender, Academic Year 1990–91.

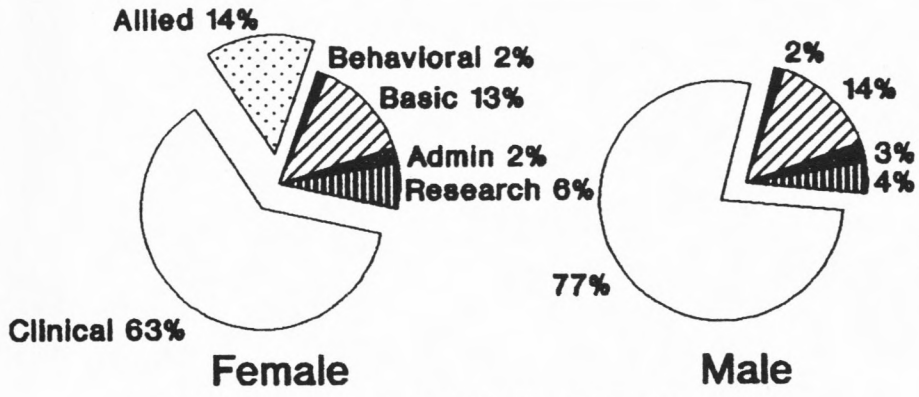

Figure 5. Primary Appointment by Gender, Academic Year 1990-91.

grounds. We then followed the progress of these cohorts through time. The analysis examines the male and female members of each cohort to see if there are significant differences in their progress.

We used the Survey of Dental Educators (SODE) for academic year 1985-86 to select the initial group for analysis. The selection criteria includes: full-time faculty at U.S. dental schools between the ages of 30 and 49. These faculty were then matched with the SODE file for academic year 1989-90. Overall, 70.4 percent of the faculty in 1985-86 matched with current faculty. The matching process allows us to see changes in academic rank over the past four years.

For the analysis of promotion rates, five cohort groups were established from the matched data set, depending on academic degree status (Figure 9). The first group (DDS + OD) consists of faculty who have a clinical doctorate (DDS/DMD, Foreign dental degree, or MD) and a second doctorate (the second doctorate could be a clinical or non-clinical degree). Almost two-thirds (63%) of this group are involved in the Clinical Sciences and 26 percent are involved in the Basic Sciences. The next group (DDS + M) contains faculty who have a clinical doctorate and a masters degree (SODE does not differentiate between different types of masters degrees). Over 86 percent of this group are associated with the Clinical Sciences. The third group (DDS) has a clinical doctorate but no other postgraduate degree. Once again, the majority of the faculty in this group (85%) are involved with the Clinical Sciences. The fourth group (OD) has a non-clinical doctorate as their terminal degree (non-clinical doctorates include PhDs, EdDs, JDs and other non-clinical doctoral degrees). Most of the faculty in this group are associated with the Basic Sciences

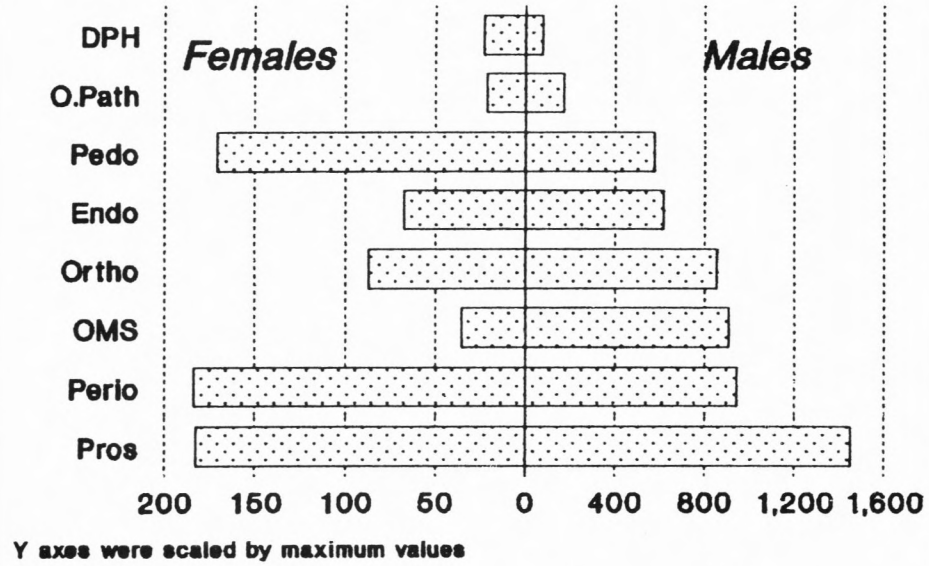

Figure 6. Specialty Area by Gender, Academic Year 1990-91.

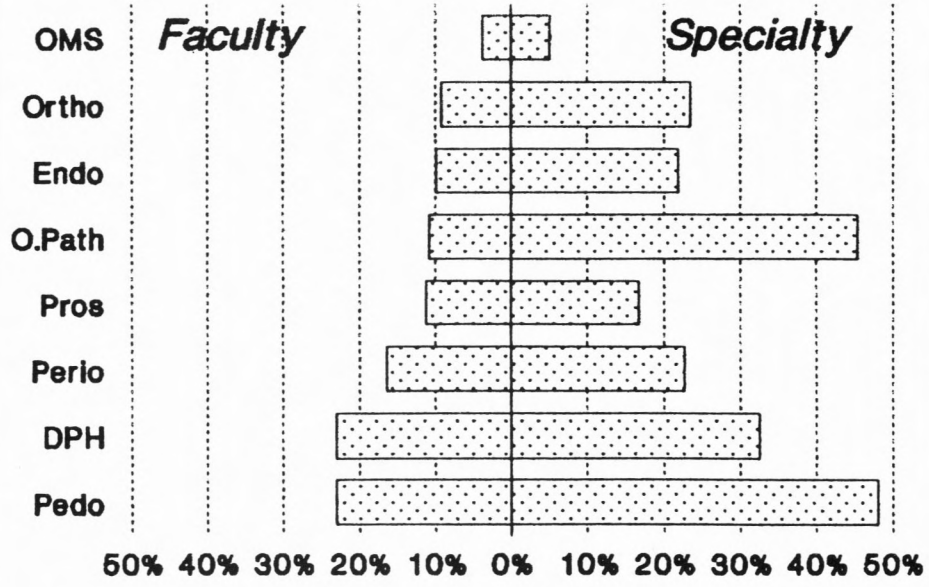

Figure 7. Female Faculty and Specialty Enrollment, Females as a Percent of Group.

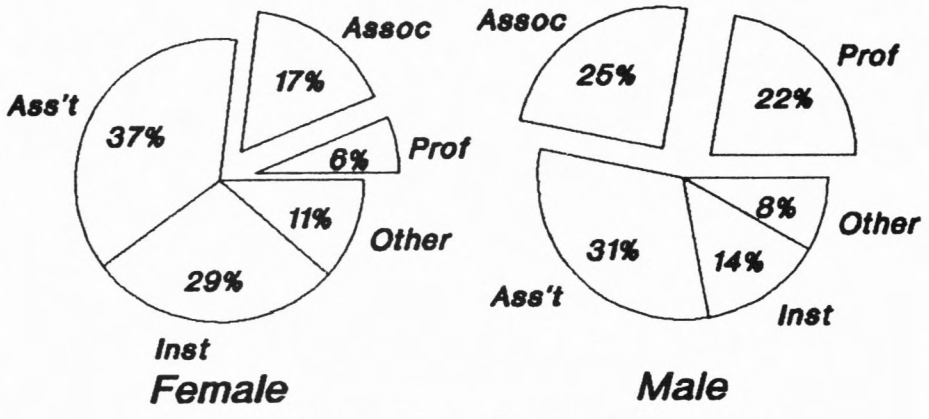

Figure 8. Academic Rank by Gender Academic Year 1990–91.

(77%). The final group (M) is composed of faculty with a masters degree as their highest degree. Most of the faculty in this group are associated with Allied Dental Education (59%); however, there is some representation in the Clinical Sciences (18%) and in Administration (12%).

The first analysis looks at promotion rates among junior faculty. We looked at changes in academic rank among those faculty who held the rank of assistant professor in academic year 1985-86. The results are presented in Table 1. There were 760 faculty members in this analysis; 22.6 percent of this sample were women. Overall, 58.2 percent of these faculty members were promoted to either associate professor or full professor. The analysis shows that promotion rates between men and women are generally similar. In fact, there were no statistically significant differences in promotion rates between men and women.

The degree classification, however, had a strong impact on promotion rates (Figure 10). Three of four faculty who have a clinical doctorate and another doctorate were promoted over the four year period. Promotion rates for faculty with a clinical doctorate and a masters degree were similar to faculty with a non-clinical doctorate. Faculty with a clinical doctorate and no other postdoctoral degree had a promotion rate of just over 52 percent. Finally, faculty with a masters degree as their highest degree had the lowest promotion rate. Overall, 59.0 percent of males and 55.2 percent of females were promoted. This difference can be attributed to the fact that women were most heavily represented in the degree category with the lowest promotion rate (masters degree) and were least represented in the category with the highest promotion rate (clinical doctorate plus other doctorate).

The next analysis looks at promotion rates among faculty who held the rank of associate professor in academic year 1985-86. The results

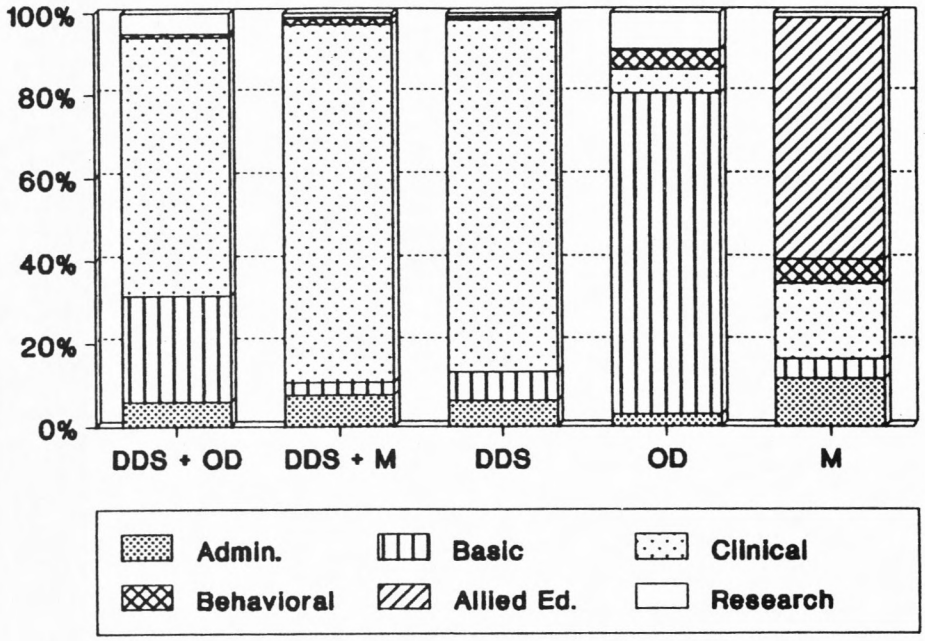

Figure 9. Primary Appointment by Degree Status.

are presented in Table 2. There were 740 faculty members in this analysis; however, only 11.4 percent of this sample were women (about half the representation in the first analysis). Promotion at this level is obviously a more difficult process as only 35.0 percent of these faculty members were promoted to full professor. The analysis shows that promotion rates between men and women are once again generally similar. However, the small sample of women in most categories contributes to the lack of statistically significant differences in promotion rates between men and women.

Once again, the degree classification had a strong impact on promotion rates. The highest rates (61.3%) were found among faculty who have a clinical doctorate and another doctorate. Faculty with a masters degree as their highest degree had the lowest promotion rate (8.3%). Promotion rates for faculty in the other degree categories were similar (about 31%).

The analysis showed that there were no significant differences in promotion rates between male and female faculty with similar educational backgrounds. There were, however, more than twice as many women in this study who were assistant professors in 1985-86 than were associate professors. This highlights the recent increase of females into the ranks of dental school faculty.

Conclusions

Several facts emerge from this investigation. Most notable is the

Table 1. Promotion Rates by Highest Degree and Gender Assistant Professors in 1985—Number and Percent Promoted by 1989

	Clinical Doctorate + Other Doctorate	Clinical Doctorate + Masters	Clinical Doctorate	Other Doctorate	Masters Degree	Total
Female						
Promoted	4	18	28	29	16	95
Total	6	26	56	46	38	172
Male						
Promoted	38	69	139	99	2	347
Total	50	111	261	160	4	588
Total						
Promoted	42	87	167	128	18	442
Total	56	137	317	206	42	760

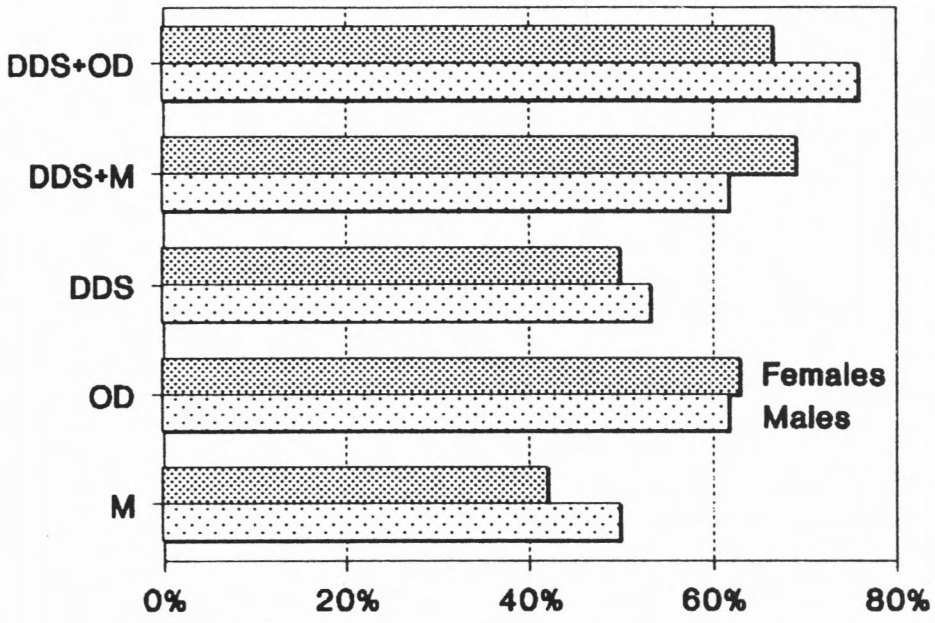

Figure 10. Promotion Rates by Degrees and Gender.

marked increase in the number of female faculty over the past decade. This increase makes sense when viewed in the context of increasing female enrollment in dental schools. Therefore, it is not surprising to find a much higher representation of women among junior dental school faculty. It is important to note that women were both more likely to be from under-represented minority groups and more likely to be employed full-time. When we looked at primary appointment status to see how women's role in the dental schools compared to men's, we found they were quite similar. With regards to the clinical specialty areas, we found differences in the concentration of women in certain areas. The relative rate of representation for women was the highest in Pediatric Dentistry, Dental Public Health, and Periodontics. The lowest rates of representation for women were found in Oral and Maxillofacial Surgery, Orthodontics, and Endodontics. However, the concentration of women in postdoctoral specialty education was much higher than their current rate of representation on faculty and could, in the future, help to raise the participation rate of female faculty among all the clinical areas. Finally, we dealt with the question of equality among the genders with reference to promotion and tenure. Here we found less women in the tenured ranks, but we believe that this is only a result of youth and a tendency to have less advanced academic degrees. △

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Table 2. Promotion Rates by Highest Degree and Gender Associate Professors in 1985—Number and Percent Promoted by 1989

	Clinical Doctorate + Other Doctorate	Clinical Doctorate + Masters	Clinical Doctorate	Other Doctorate	Masters Degree	Total
Female						
Promoted	1	5	3	9	2	20
Total	2	14	9	36	23	84
Male						
Promoted	45	64	60	70	0	239
Total	73	172	190	221	0	656
Total						
Promoted	46	69	63	79	2	259
Total	75	186	199	257	23	740

Symposium: Women Dentists

THE FEMININE MYSTIQUE IN DENTAL EDUCATION: A FEMINIST'S CHALLENGE

David A. Nash*

I am going to engage in a polemic—a controversial disputation. I know that is what I am doing and I want you to know that I know. I will not speak to specific strategies or tactics to recruit, retain, and advance women in dental education. Rather, my comments will be more conceptual. My tone will strike passion, for I feel strongly about this issue. I may not be as substantive as either you or I would like, but I will be expressing my personally reflected views on this vitally important topic. My goal is two-fold: first, to express one dental educator's perspective on a problem in dental education, and secondly, to motivate other dental educators to pursue, in substantive and tangible ways, redressing that problem.

Being a Feminist

I am a feminist and am here today to challenge the feminine mystique in dental education. In 1963 Betty Friedan sparked a major revolution in our society with her publication of *The Feminine Mystique*.[1] A "mystique" is a complex of beliefs and/or attitudes around an idea having a meaning or reality that is neither apparent to the senses nor obvious to the intellect. Ms. Friedan argued in her book, to me persuasively, that mystical beliefs of the feminine have overwhelmed our society. The feminine mystique says the root of women's problems is that women envy men and try to be like men rather than accept their own nature, their femininity; which can find fulfillment only in sexual passivity, male domination, and nurturing maternal love. The book, as a disclosure of the real nature of femininity, became a vision for women in much the same way Martin Luther King's "I Have A Dream" speech became a vision for Afro-Americans. With Ms. Friedan's leadership, the movement was galvanized by the founding, in 1966, of the National Organization for Women (NOW). NOW was established with a declared goal of moving to true equality for all women in America and an equal partnership of the sexes. The movement to liberate women in this country from the feminine mystique began. I am a feminist and a member of the National Organization for Women. Note that is not "of" but "for" women. I proudly wear my tee-shirt that proclaims, "a man of quality is not threatened by women for equality."

David A. Nash

To me, to be a feminist is to assert:

- Women and men are equal in value.
- Women and men are equal in dignity.
- Women and men are equal in respect.
- Women and men are equal in potential.
- Women and men are equal in rights.
- Women and men are equal in freedom.
- Women and men are equal in autonomy.
- Women and men ought to be equal in opportunity.
- Women and men ought to be equal in responsibility.
- Women and men ought to be equal in obligations.
- Women and men ought to be equal in power.

To be a feminist is to affirm that women, as men, should have an environment that facilitates the realization of their full potential as human beings.

To be a feminist is to believe that every political ideology, every social structure, every religious faith, every organizational configuration, every cultural assumption, every government bureaucracy, and all policies, practices, and procedures must support the notion of the radical equality of women and men, the full humanity of both sexes.

To be a feminist is to fully support and endorse the unique, influential, important, demanding, and essential role of women in society.

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Presented at the Annual Session of the American Association of Dental Schools March 11, 1991 in New Orleans, sponsored by the Section of Pediatric Dentistry.

To be a feminist is to actively engage oneself in tangible ways in helping women to be all they can be and all they want to be.

To be a feminist is to reject all sexism.

I am a feminist and I reject the feminine mystique in society, in dentistry, and in dental education.

What is the feminine mystique in our profession? The feminine mystique in dentistry and dental education is the belief that women are not now, cannot be, and should not be equal partners with men in the profession; that women in the profession are an interesting phenomenon, but are only incidental; that women are not essential to the maturing of the profession; that the important, influential, and valuable work of the profession is, and must be, accomplished by men. Women's role is secondary, supportive, and superfluous. Acceptance of these mystical notions, neither apparent to the senses nor real to the intellect, contributes to what is a major problem in dental education; a lack of appropriate numbers of women faculty to balance the male contributions in education and research, and a lack of adequate numbers of women faculty members to serve as role models for growing numbers of women student dentists.

The Value of the Androgynous

I believe that women and men are different, in fact, I know they are. I applaud the differences! Each sex has unique and essential qualities and strengths to offer to society and society's institutions. Dentistry and dental education require the balancing qualities of women if the profession is to be as strong as it can and should be.

Carol Gilligan, working with the late Lawrence Kohlberg at Harvard, has identified significant differences in the psychological and moral development of men and women. Gilligan's book, *In A Different Voice*[2], is a most insightful treatise on women, men, and the differences existing between them. Her research at Harvard, which is supported by other gender - focused research, points out the uniquenesses of the male and the female that must be joined in a complementary manner if the strength of the total human, and I will add human organizations or institutions, is to be attained.

While the male emphasis is on:

- Fairness
- Justice
- Isolation
- Right
- Self Expression
- Self
- Rights
- Separation
- Independence
- Competition

The female emphasis is on:

- Care
- Love
- Intimacy
- Good
- Self Sacrifice
- Others
- Responsibilities
- Attachment
- Inter-dependence
- Cooperation

Riane Eisler in her revisionist account of history, *The Chalice and the Blade*[3], looked at the history of the human race through the prism of gender. She used the metaphor of the blade to symbolize the cutting, penetrating, and competitive character of the male and the chalice to represent the receptive and cooperative qualities of the female. Her study suggests that men are oriented toward forming hierarchical organizational arrangements based in power; while women are predisposed to organizing networks based on communication.

Blending the characteristics of the male and the female is understood as androgyny. Literally, "androgyny" is from the Greek for man, "andros" and for woman, "gyne." Androgyny is men and women existing side by side. In the androgynous person, feminine and masculine characteristics exist side by side in the same individual. Joyce Trebilcot argues in the *Journal of Social Philosophy* that men and women should attempt to develop personality traits and engage in activities traditionally assigned to the other sex; a single ideal for all.[4] Androgynism, in so far as it advocates shared roles, is now the official public policy in a number of countries. Since 1968 the official policy of Sweden has been, "every individual regardless of sex, shall have the same practical opportunities, not only for education and employment, but also for his or her own financial support; as well as shared responsibility for child rearing and housework."[5]

An androgynous culture, an androgynous profession, and an androgynous college of dentistry, are ones in which the uniquenesses of the male and female are admired, cultivated, encouraged, supported, and affirmed. The resulting complementary is a synergism, with the whole being greater than the sum of the two parts. Those of us with successful marriages have no trouble understanding this concept, for we know that this institution is predicated on such a radical *equality*. Dentistry and dental education, in order to mature, need to become androgynous.

Women in Dentistry

In 1981, 19% of our total student dentist population of 22,000 were women. Today 35% of the population of 15,000 student dentists are females. Nationally our current first year class is 38% women, an increase from 21% just ten years ago. Today in our College of Dentistry at the University of Kentucky, if we were to exchange five males for five females, we would have more women enrolled than men.

In 1982, 825 of our nation's dental graduates were women. In 1991, 1,304 will be, an increase of almost 40% in less than ten years. This year the University of Kentucky College of Dentistry will graduate more women in its class than men. Although there is no complete data base with which to confirm it, it may be the first time such has occurred in the history of dental

education. Interestingly, only one of our top ten graduates academically is a male, and all inductees into Omicron Kappa Upsilon, the national honor society of dentistry, are women. What have we altered in our College to accommodate to these dramatic changes? The answer is nothing.

In contrast to these statistics on our student bodies, only 857 of all 5,000 full-time faculty, or 17% are women. Only 15% (1,078) of all part-time faculty (6,904 individuals) are women. Thus we have 35% female students and 15% female faculty.

These figures do not comport with the ideal, a balancing of men and women. While we are rapidly moving to an ideal balance of male and female students, ratios among faculty are lagging far behind. Possibly we are only observing a delayed response that is due to women gaining credentials to enter academics, and possibly we will catch up. I am not optimistic.

Teresa Dolan, in a recent issue of the *Chronicle of the American Association of Women Dentists*, reported on a survey conducted in 1989 of the membership of that organization. The survey addressed the most serious problems or important issues facing women dentists today. The most consistent themes, "focused on the lack of role models; female leadership in organized dentistry; and poor visibility."[6]

The metaphor of the "glass ceiling" has been widely utilized to communicate the idea that while advancement to upper administrative echelons in organizations appears unobstructed to women there are really invisible barriers. Eric Solomon reported last year in the *Journal of Dental Education* that 8 of 117 deans and 20 of 281 department chairs in our colleges of dentistry were women. He said, "data show that movement of female faculty into administrative positions is quite slow."[7] The "glass ceiling" appears to exist in academic dentistry. Yet evidence suggests that women excel over men in certain leadership qualities. In the current issue of *National Forum*, the journal of Phi Kappa Phi, Carolyn Desjardins reports her research regarding gender difference in leadership.[8] She found that:

Women Excelled In:

- Presence
- Optimism
- Initiative
- Decisiveness
- Persuasiveness
- Interest in Developing People

Men Excelled In:

- Self Esteem
- Self Confidence
- Self Control
- Challenge
- Openness to Change

I want to be sure I am not misunderstood. I am not an altruistic reformer, virtuously proclaiming the merits of women's rights and women's liberation. A reformer, yes; altruistic and virtuous, no. I believe gender roles are destructive for men. We men have paid a high price for the "control" and "power" we have traditionally exercised over women. I am a feminist because I believe that the feminist movement's efforts to transform women into autonomous, responsible decision makers is ultimately beneficial for men; for me. Such will make male liberation possible. Rollo May states it directly in his recent book, *The Cry for Myth*, "no man can withhold liberation from women without losing it himself."[9] Men should insist that women make the transition to become "total persons." If women do not become complete in their potential, their feminine humanity, men cannot become complete in their male humanity. We men can become "total persons" only if we are freed from the constraints imposed on both sexes by traditional gender roles.

The lack of an appropriate number, 50%, of women on dental faculties today is a problem. Inadequate numbers of women in leadership roles in our colleges is a problem. Failure to acknowledge the imperative of a balancing of men and women - failure to acknowledge the valuable role of women in leadership; and failure to affirm those ideals, are part of the feminist mystique. I reject and encourage you to reject this mystique!

However, I believe that a significant number of faculty members and leaders in dental education subscribe to the feminine mystique and are not committed to an androgynous culture in dental education. I hope I am wrong, but my observations lead me to conclude that the feminine mystique is alive and well in the clinics and classrooms of our colleges.

Taking Affirmative Action

Affirming an androgynous college leads to a commitment to leveling the playing field for women; to an intense and passionate interest and concern for recruiting, retaining, and advancing women in dental education; and to taking affirmation action as an equal opportunity employer. We are members of universities that are "equal opportunity employers." Federal law supports and upholds the ideal of sexual equality. However, there is a gap between our rhetoric and our reality, if we have the courage to take an unvarnished look!

As I stated earlier, I believe in the equality of the sexes. The formal principle of equality, attributed to Aristotle, is equals must be treated as equals, while unequals must be treated unequally in proportion to their differences. But, what constitutes equality or inequality in treatment? The usual way of answering this question is to say that the differences between individuals must be relevant to the issue in question. Men and women are entitled to the same treatment when there are no differences between them relative to the matter in question, in our instance, being a dentist or a dental educator.

The logical extension of Aristotle's principle of equality is found in John Rawls' influential book, *A Theory of Justice*[10]. What is just

today with regard to the sexes, considering the systematic inequalities perpetrated against women for generations, yes, even centuries? Rawls explicated his concept of distributive justice by arguing that social and economic inequities are to be arranged so that they are both reasonably expected to be to everyone's advantage and attached to positions and offices open to all. What does "justice as fairness," to use Rawls' terms, require today in order to create a level playing field for women?

Kids have a keen sense of justice. Remember as a child when you would choose up sides for a game? You naturally compensated for age, size, and ability to be sure that the game would be fair . . . and fun! I remember the basketball teams for which I was chosen always had an extra player to compensate for me.

Today we are attempting to address "justice as fairness" in treating women by compensating for the wrongs of the past. We call our attempts affirmative action. As a society we say we will take action affirming the role and the value of women (and minorities) by actively searching for women, identifying women, and giving preferential treatment to women in hiring decisions; all in an attempt to redress the systemic, indigenous, and insidious inequalities that have and continue to exist in our culture and its institutions.

I strongly believe that to resolve the problem I have identified, inadequate numbers of women faculty members and administrators to balance our male-oriented approaches, and to serve as effective role models for our female students; that we must take aggressive and affirmative action! While our universities publicly proclaim their allegiance to the concept, all too often in academic dentistry I see and hear the "good ole boys network" beating its tribal tom-toms. Not only because of our sheer numbers, but also because of our communication networks, we men call men to identify other men for positions which become available.

Not infrequently we men subtly deceive ourselves into believing that the male applicant is the more qualified, for any number of reasons, for the position that is available. It is not always true that opposties attract; in most instances in hiring, we gravitate to sameness. This is not affirmative action. This is not fairness. This is a continuing manifestation of the feminine mystique afflicting dental education. To the extent we are unable to destroy this mystique, replacing it with a reasonable androgyny, to that extent we will be unable to create a culture that recruits, retains, and advances women. Recruiting, retaining, and advancing women is the result of a culture that values the unique and essential role of women. Absent such a valuing and commitment, all programs, policies, and procedures will be hollow.

Conclusion

What must be done? Generally three things:

1. We must alter the assumptions and values of faculty, primarily men; however, I must acknowledge that I have observed women faculty seduced by the feminine mystique as well.
2. We must treat women preferentially, out of a sense of fair play, leveling the playing field; a choosing up of sides so the game will be fair.
3. We must select, appoint, elect, or establish leaders in dental education (men and women) who, in their attitudes and by their deeds, testify to their enthusiastic and unequivocal support of women in dentistry and dental education.

Such is not an easy task and significant change is unlikely to occur without a mild revolution. Power is only reluctantly relinquished.

I would challenge men today who are self-assured in their masculinity and comfortable and confident in their performance, the truly androgynous man; to join hands with our female colleagues in refusing, as did Rosa Parks, to "go to the back of the bus" to catch a glimpse of an academic community in dentistry where "justice overflows like water." Only when women are acknowledged, affirmed, and valued for the contribution that they, and only they can make in dentistry and dental education, then, and only then, will the feminine mystique be destroyed and men and women be able to join hands and hearts in proclaiming the strength, beauty, and potential of our chosen profession. △

References

1. Friedan, Betty, *The Feminine Mystique*. New York, W.W. Norton and Company, 1963.
2. Gilligan, Carol, *In A Different Voice*. Cambridge, Massachusetts, Harvard University Press, 1982.
3. Eisler, Riane, *The Chalice and the Blade*. New York, Harper and Row, 1987.
4. Trebilcot, Joyce, Two Forms of Androgynism. *Journal of Social Philosophy*. VIII (1):4–8, 1977.
5. Seward, G.H. and Williamson, R.C., Editors, *Sex Roles in Changing Society*. New York, Random House, 1970.
6. Dolan, Teresa A., Important Issues Facing Women Dentists, *Chronicle*, a newsletter of the American Association of Women Dentists. 12:1, January-February, 1991.
7. Solomon, Eric, Promotion and Appointment to Administrative Positions of Dental School Faculty by Gender. *Journal of Dental Education*. 54(8):530–534, 1990.
8. Desjardins, Carolyn and Brown, Carol Osman. A New Look at Leadership Styles. *National Forum*. LXXI(1):18–20, 1991.
9. May, Rollo. *The Cry for Myth*. New York: W.W. Norton, 1991.
10. Rawls, John. *A Theory of Justice*. Cambridge, Massachusetts: Belknap Press of Harvard University Press, 1971.

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Symposium: Women Dentists

Women Dentists: From Here to the 21st Century

Linda C. Niessen*

1990 represented a milestone year for Alaskan women. Susan Butcher won the Alaskan Iditarod, (the 1100 mile dog-sled race) for the fourth time. And another Alaskan pioneer, Dr. Geraldine Morrow was elected President-elect of the American Dental Association, 125 years after the first woman dentist, Dr. Lucy Hobbs Taylor received her dental degree.

For 110 years following Lucy Hobbs Taylor's graduation from dental school (in 1865), few women followed her example.(1) However since the late 1970's, the number of women entering and graduating dental school has increased significantly.

In 1980, 19.8% (1170) of the first year students were women.(2) By 1990, 38% (or 1522) women were enrolled as first year dental students.(3) (I might add, while the percentage of women has doubled over the past ten years, in terms of real numbers, the increase represents only an additional 350 women predoctoral dental students per year in 1990 over the 1980 numbers.)

The focus of this presentation will be to provide a context for interpreting the data presented in the previous papers. In other words, I'd like to take these dental patches of information and weave them into the quilt of the broader society.

Linda C. Niessen

So to briefly summarize:

1. The increase in the number of women dentists from the 1980's to the present has been substantial. I venture to say, it will be sustainable into the 21st century(2,3).
2. Practice patterns between men and women dentists are showing some initial differences (4,5,6).
3. The number of minority women dentists has increased. Little is known about minority women dentists but we do know that women dentists are more culturally and racially diverse than men.
4. Women dentists have increased in number on dental faculties since the 1980's but primarily are clustered at the low end of the faculty career ladder (7)
5. Affirmative action may not be taken seriously by academic institutions.

It is clear that dentistry isn't the first profession to confront some of these issues. I offer a broader perspective as we examine these issues for several reasons. Dentistry, after all, is a microcosm of society. The influences and actions of society at large are mirrored and reflected in dentistry. As we examine the trends and actions of various sectors of the broader society, I believe we can learn from these sectors. Business and industry, in particular, have been dealing with these issues and have developed innovative programs and practical strategies which may be applicable to dentistry. In other words, we don't have to reinvent the wheel, or the loom, as the case may be.

So back to points number 1 and 2 - the increase in the number of women dentists and evidence that practice patterns between men and women may differ. In essence, these are the quantity and quality issues.

What are the implications of this increasing number of women dentists? We have heard that women now number 30% of dental students. Is this a big number or a small number? The answer is "relative to what." Relative to 1970, clearly it is a large number. Relative to 2000, 2010 and 2020, who is to say? In the absence of a national consensus on a personnel policy for dentistry, the number is merely a descriptor of the profession. Do we as a society have a collective vision of what the ratio of women to men, as dentists, should be or where the number of women dentists should stabilize? Might I mention the unspeakable: are we prepared for dentistry to become completely female? And if that is the case, will

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Presented at the Annual Session of the American Association of Dental Schools March 11, 1991 in New Orleans, sponsored by the Section of Pediatric Dentistry

the gender transformation of the profession carry with it the concomitant devaluation, i.e., loss of status, prestige and, most importantly, the loss of income that has occurred in the past when men's professions have become women's "work". Even today in countries where the majority of dentists are female, the positions carrying the high status and prestige, those as university faculty, are still held by men.

The question of whether women can become dentists is now a moot point. The more relevant questions become, will women practice dentistry in the same or different manner than men? Will they be granted the same rights, privileges and responsibilities the dental profession offers to its male members? Essentially, these are the quality aspects of the equation.

Current evidence is suggesting that women are practicing in different manners from men. Women are redefining the practice options to accommodate their needs, most often, the biological need of integrating a professional career with parenting responsibilities. In making practice comparisons, I have always been struck by the absence of a "gender-neutral career standard". Practice comparisons are usually made relative to men, with the implication that the male career pattern is the "gold standard". Why?

The biological differences are unavoidable. Women, at least for the near future, will continue to bear the children and usually assume the primary responsibility for their care. The goals women and men set for their parenting needs, will affect their career choices and practice patterns.

Our colleagues in business are discovering that since women will be the majority of the entering work force in the 21st century, they must address family care issues, i.e. caring for children and/or parents. Corporations are establishing programs, such as flex time, job sharing, and child and elder care centers to integrate family care with professional needs- all efforts carried out so as not to lose their talented and productive female employees or executives, individuals in whom they have already invested considerable time in training and experience.(8) The private practice of dentistry may provide an ideal laboratory for examining how women can integrate family and career. As the owner of one's practice, a woman can set the rules to her needs. Unfortunately for women dentists employed by others, such as universities, hospitals, or other dentists, creative opportunities for simultaneous career and family development may not be as easily located.

Felice Schwartz in her controversial article in the Harvard Business Review, "Management Women and the New Facts of Life" served to open the discussion of integrating career and family.(9) This model, which was nicknamed the "Mommy Track" by the popular press, while certainly not a panacea, focussed the discussion on women. However by opening the discussion, it also creates the opportunity to discuss similar career tracks for men, a "Daddy Track", so to speak. The extent to which a profession can accommodate lifelong career development, i.e. dental school through practice through retirement, with men and women's needs for child and/or parent care, will make that profession more appealing to both genders. A profession facing a recruiting crisis cannot afford to neglect these issues and miss the opportunity to identify the best and brightest.

Research on women physicians has shown that they spend more time talking to their patients. Are women dentists seeing a similar or different patient mix as the men? Secondary analysis of the 1985 ADA Survey of Dental Practice found that women dentists cared for more low income patients than men. (5)

Research from business is suggesting that women and men have different leadership styles. Women have a more "participatory-interactive" style while men have a "command and control" style.(10–11) How will leadership styles affect dental practice patterns?

And the most distressing difference is the income difference. If you could hire one of two employees, and one would work for 61 cents and the other would work for a $1.00, who would you hire? Women being paid less money than men puts men at a competitive disadvantage. Clearly men have a stake in women's equality of salary.

Are patient outcomes different? How will the oral health of the public change as a result of more women entering the profession? This is the outcome assessment question in examining practice patterns. These qualitative questions have yet to be explored in the literature on practice patterns. Nor has a data base been established to systematically collect this information.

Dr. Shelia Price from the University of West Virginia conducted one of the first surveys of minority women dentists. Among other things, Dr. Price's paper points out that women dentists are more culturally/racially diverse, as a group, than men.

Cultural diversity is a bellwether issue for business and industry as well as higher education. As in the case of family care issues, these are issues of concern to business because they relate to industrial self-interest and survival.

The cultural diversity of the U.S. population in the 21st century will have a major impact. To the extent that any organization can welcome and nurture the diversity, that organization will truly have a competitive advantage in the future American marketplace. Cultural diversity can add a wonderful depth and richness to the fabric of dentistry should the profession choose to recognize it, welcome it, nurture it and learn from it.

The American Association of Dental Schools (AADS) Special Committee on Women and Minorities has addressed this issue with an ambitious agenda. The commit-

tee's report is listed under Resolution 7 in the 1991 House of Delegates book.(12) This agenda includes establishing "the advancement of women and minorities" as an action priority of AADS. This action priority includes recommendations on information and data collection, qualifications and skills development of professional linkages through networks. This committee is to be commended for an outstanding list of actions. As stated at the AADS 1991 opening session, one of the strategic directions for AADS is to enhance the understanding of human diversity. The Action Plan as set forth by this committee weaves the thread of cultural diversity into the fabric of dental education.

Are dental schools meeting the needs of female students? Using certain outcome assessments, the answer appears to be a yes. Women do not appear to have higher attrition rates in dental schools than men. Women also appear to be applying to postdoctoral training programs in the same percentages as their male counterparts. However as we have heard, they apply differentially to postdoctoral programs. Fifty percent of the applicants to pediatric dentistry specialty programs are now women, while only 10% of the applicants to oral and maxillofacial surgery are women.(13) One can only ask what occurs during dental school that facilitates an interest in pediatric dentistry but impedes the interest in oral and maxillofacial surgery. Certainly more research is needed to answer this question.

Dr. Solomon discussed changes in the dental school environment.(7) Where are the role models that Dr. Enid Neidle in her 1986 AADS Presidential address identified as sorely needed?(14) The dental school faculty has made some improvements since 1986 but women faculty continue to be clustered at the lower ends of the academic spectrum. And if, in fact, faculty does not take affirmative action as seriously as some suggest, how then will women have the opportunity to become role models for the next generation? Who are the men sufficiently courageous to open the doors for the talented of gender and color? Will women's sheer numbers ensure that a certain percentage will break through the academic "glass ceiling"(15) to be promoted to full professorships and/or to academic policy-making positions as deans?(16) And when that occurs, will women dentists be "honored in authority" as are their male counterparts?

Where do we go from here? The issue of recruitment and retention for dentistry will continue to be a major issue in the next decade. We must continue to recruit the best and the brightest for dentistry. The good news is that men and women of all races are more welcome to dentistry than ever before. The Select program is an excellent start and should continue. But our vision must expand. The best and the brightest may be working in other fields. Job re-training and students over age 40 may offer possibilities that dentistry has only begun to tap. Ken Dychtwald in his book, "The Age Wave," discussed sequential careers(17). This concept will result from the technology explosion that may find an individual, trained in the year 2000, obsolete in 2015. Sequential careers enable individuals to work in a field for 15–20 years and then retrain for another 15–20 year career.

Organizationally, how can we ensure that women dentists and all dentists reach their potential to contribute to the dental profession. As a start, every organization needs a clear policy statement on affirmative action - an organizational Civil Rights act, so to speak: one resolution stating the organization's commitment in all its activities to social equity, gender and racial equality.

Additionally, there may be some lessons to be learned from our colleagues in medicine. In 1984, the American Medical Association initiated the "Women in Medicine" project. The purpose of this project was to address issues of special concern to women medical students and physicians and to facilitate their participation as members and leaders in organized medicine. By 1989, this project developed into the Department of Women in Medicine as part of the American Medical Association. Key activities of the department include an AMA Women in Medicine Advisory Panel which serves in an advisory capacity to the AMA Board of Trustees. The Department sponsors a data bank to recruit candidates for leadership positions in organized medicine, government and academia. The Department serves as an information clearinghouse on women physicians and provides comparison data on the numbers and practice characteristics of women medical students and physicians. It has gathered information on maternity leave policies for women in residency programs, examined child care facilities available through hospitals and developed guidelines for preventing, identifying and addressing sexual harassment cases in medical school, residency training or practice.

Given the limited data available on women's practice patterns, a data base needs to be developed. The ADA Division of Economic and Behavioral Research must continue to oversample women and minority dentists in order to obtain a more representative sample for the ADA's Survey of Dental Practice. It will be important to monitor the cohort changes in practice patterns in the future.

Our colleagues in higher education also have models to offer. The Association of American Colleges (AAC) has initiated a "Project on the Status and Education of Women". AAC has published several monographs on the "chilly climate" for women in higher education.(18,19) In a similar vein, the American Council on Education's (ACE) Office of Women initiated the National Identification Program in 1977. The purpose of this program was the advancement of women in higher education administration. Their operating premise

is that because relatively few women are located in policy-making levels of administration, higher education experiences a loss of intellectual talent, potential leadership and female role models. The program identifies potential women leaders via state coordinators and develops programs and strategies to promote their advancement. This program has contributed to the successful advancement of women into positions of leadership in higher education.

Like ADA, AADS has nothing comparable to the programs of the AAC and the ACE. However both these programs offer the potential linkage to dental education and serve as a model for action which can be taken by the dental organizations. In fact, the AADS Special Committee on Women and Minorities also recognized this opportunity and recommended, "that AADS explore the American Council on Education's National Identification Program and Women in Medicine Program to develop appropriate models for AADS."(12)

Recommendations for the Future

Women dentists are here to stay. The ability to capitalize on their assets depends on the profession's ability to expend the necessary resources to develop women's careers as the profession has done in the past for men. The recommendations below provide a framework for addressing gender issues in dentistry, a loom, so to speak, on which the fabric of women can be included in the tapestry of dentistry.

1. Recruitment of women and minorities must continue if dentistry is to share in the best and the brightest students the country has to offer.
2. A data base on dentists, oversampled to include sufficient numbers of women dentists, should be developed and maintained to identify the contributions women are making to the profession.
3. Professional dental organizations must adopt "organizational civil rights" acts to ensure that participation in these professional activities is encouraged and welcomed by all members of the profession.
4. Dental academia must take its women faculty, women students and women staff seriously and ensure that its affirmative action programs are more substance than form.
5. Professional dental organizations must link to other professional organizations such as the AMA or AAC, who have considerable knowledge and experience in addressing gender-related issues.

Dentistry truly is evolving as more women define their roles as women and as dentists. The evolution is occurring gradually. The opportunities for linkage and learning with other professions are clearly available to dentistry but not without our energy, enthusiasm or commitment. To borrow a line from Goethe, by way of the American Fund for Dental Health, "Whatever you can do, or dream you can do, begin it. Boldness has genius, power and magic in it." The dream of a just and equitable profession has magic for me. Won't professionals and patients alike benefit when we all leave a "tell-show-do" profession to enter an "ask-listen-share" one? △

REFERENCES

1. Niessen, L.C., Kleinman, D.V., Wilson, A.A., Practice characteristics of women dentists. JADA 113(6):883–889, 1986.
2. Council on Dental Education Annual Report. Dental Education 1990/91. Chicago, American Dental Assn. 30 pp.
3. Council on Dental Education. Supplemental 2 Trend Analysis Supplement 2 to the 1990/91 Annual Report on Dental Education. Chicago. American Dental Assn. 21 pp.
4. Dolan, T.A., Lewis, C.E., Gender trends in the career patterns of recent dental graduates. J. Dent. Educ. 11:639–645, 1987.
5. Wilson, A.A., Branch, L.G., Niessen, L.C., Practice patterns of male and female dentists. JADA 116(2):173–177, 1988.
6. Bureau of Economic and Behavioral Research, Council on Dental Practice. A comparative study of male and female dental practice patterns. Chicago, American Dental Assn. May, 1989. 53 pp.
7. Solomon, E.S., Gray, C.F., and Whiton, J.C., Promotion and appointment to administrative positions of dental school faculty by gender. J. Dent. Educ. 54(8):530–534, Aug. 1990.
8. Frost, C., "How one bank is handling a 'two track' career plan". Wall Street Journal, March 13, 1989.
9. Schwartz, F.N., Management women and the new facts of life. Harvard Business Review. 65–76, Jan.-Feb., 1989.
10. Rosener, J.B., Ways women lead. Harvard Business Review. 119–125, Nov.-Dec., 1990.
11. Ways men and women lead. Debate. Harvard Business Review. 150–160. Jan.-Feb., 1991.
12. AADS Special Committee on Women and Minorities. Resolution 7 House of Delegates Manual. Washington, DC. AADS. March, 1991.
13. Solomon E.S., Druitt, J.K., Waron, J.C., Characteristics of applicants to postdoctoral dental education programs. J. Dent. Educ. 55(2):172–174, Feb., 1991.
14. Neidle, E., To Make Things Right. J. Dent. Educ. 50(6):297–299, 1986.
15. Hymowitz, C., Schellhardt, T., The glass ceiling, why women can't seem to break the invisible barrier that blocks them from the top jobs. Wall Street Journal. March 24, 1986, p.1.
16. Scholler, J.G. The advancement of women in academic medicine. Commentary. JAMA 264:1854–1855, Oct. 10, 1990.
17. Dychtwald, K., and Flowers, J., *The Age Wave*. Los Angeles. Jeremy Tarcher, Inc. 380 pp., 1985.
18. Sandler, B.R., and Hall, R.M., The campus climate revisited: chilly for women faculty, administrators and graduate students. Project on the Status and Education of Women. Washington, DC. Association of American Colleges. Oct., 1986, 28 pp.
19. Ehrhart, J.K., and Sandler, B.R., Looking for more than a few good women in traditionally male fields. Project on the Status and Education of Women. Washington, DC. Association of American Colleges, Jan. 1987. 24 pp.

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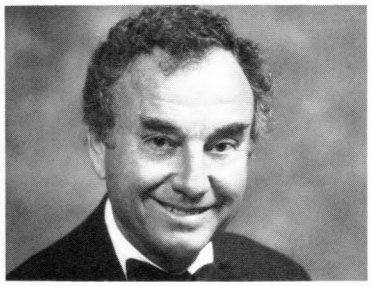
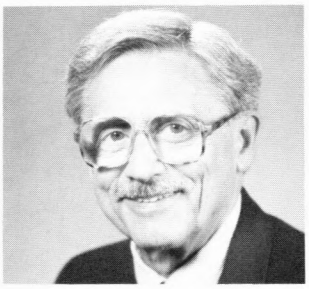
NEWS OF FELLOWS

Earle F. Cote was recently installed President-Elect of the American Association of Orthodontists. Dr. Cote is in the practice of Orthodontics in Greenwich, CT, and has served as the President of the College of Diplomates of the American Board of Orthodontics.



Earle F. Cote

William R. Cinotti has been elected President of the New Jersey State Board of Dentistry. Dr. Cinotti is currently the Associate Dean for Interdisciplinary and Extramural Programs at the New Jersey Dental School of the University of Medicine and Dentistry of New Jersey.



William R. Cinotti

R. Bruce Donoff was recently appointed Dean of the Harvard School of Dental Medicine. Prior to this appointment Dr. Donoff served as the Chairman of the Department of Oral and Maxillofacial Surgery of the Harvard School of Dental Medicine.

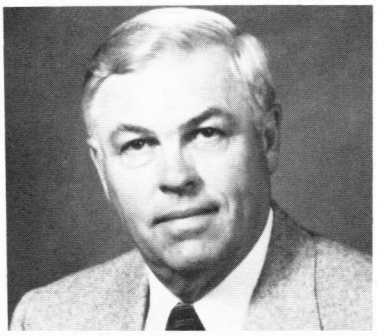
R. Bruce Donoff

W. Robert Biddington was recently appointed Vice President for Health Sciences at West Virginia University. Dr. Biddington has served as Dean of the West Virginia University School of Dentistry since 1968 and also as Interim Provost and Vice President of Academic Affairs at the University from 1979–80.

Dr. Biddington is a Past President of the American Association of Dental Schools and of the American College of Dentists. He is presently the President of the American College of Dentists Foundation.

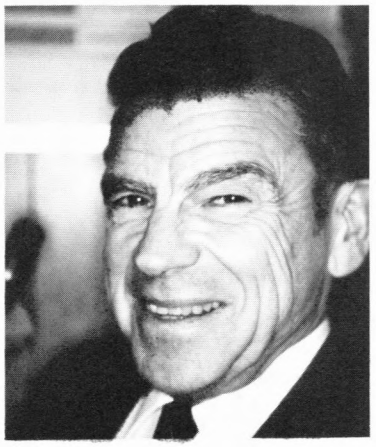
W. Robert Biddington

F. Gene Dixon was recently honored by the University of the Pacific School of Dentistry with the presentation of its Alumni Association's Medallion of Distinction Award. Dr. Dixon served as the first Chief Executive Officer of California Dental Service (now the Delta Dental Plan of California) and is a recipient of the Distinguished Service Award from the American Dental Association. He was recognized for his significant contributions to the school, the profession and community.



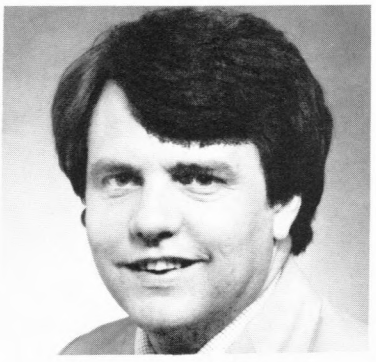
F. Gene Dixon

Philip J. Boyne was the recipient of the H. W. Archer Award presented by the American College of Oral and Maxillofacial Surgeons. Dr. Boyne, Professor of Oral and Maxillofacial Surgery at Loma Linda University Medical Center, was recognized for a lifetime of achievement and contributions to the profession and to his specialty.



Philip J. Boyne

Richard N. Buchanan was appointed Dean of the New Jersey Dental School of the University of Medicine and Dentistry of New Jersey. Dr. Buchanan had previously spent 16 years at the University of Texas Dental School at San Antonio where he was the Associate Dean for Academic Affairs for five years.



Richard N. Buchanan

James E. Duke of Texarkana, Arkansas, recently retired from the U.S. Army Reserve and other active duty branches (Air Force) after over 40 years of service. At the time of his retirement he was awarded the Army Legion of Merit for outstanding service.

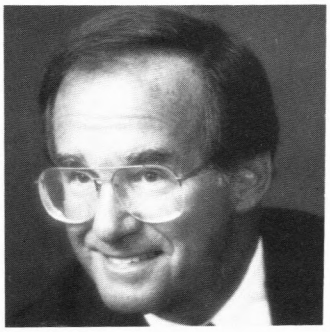
James E. Duke

George Feldman of Lawrence, New York was the recipient of the Alumni Award of Merit presented by the School of Dental Medicine University of Pennsylvania. Dr. Feldman was recognized for his valuable services and devotion to the advancement of the dental profession, the School of Dental Medicine and the Dental Alumni Society.

George Feldman

Thomas R. Flinn was recently honored by the University of the Pacific School of Dentistry with the presentation of its Medallion of Distinction Award. Dr. Flinn, who has served as the Vice President of the American Dental Association and of the California State Parole Board, was recognized for significant contributions to the school, the profession and the community.

Lewis A. Kay of Haddonfield, New Jersey was elected Secretary/Treasurer of the American Academy of Pediatric Dentistry. Dr. Kay is a Past Editor of the New Jersey Dental Association and a Past President of the American Academy of Dentistry for the Handicapped.



Lewis A. Kay

Michael D. Rennert has been elected a Trustee of the American Association of Orthodontists. Dr. Rennert practices Orthodontics in Montreal and is an Associate Professor on the Dental Faculty of McGill University where he previously served as Chairman of the Orthodontic Department for sixteen years.

Michael D. Rennert

Thomas R. Flinn

James A. Harrell, Sr., Former ACD President, is serving as a member of the American Dental Association Council on Annual Sessions and International Relations. He is also continuing as the Chairman of the ACD Steering Committee for the Campaign for the 90's. In addition, he has recently accepted the Chairmanship of a Committee to raise funds for a new clinical building for the University of North Carolina School of Dentistry.

James A. Harrell, Sr.

Barbara J. Steinberg has been appointed as a consumer advisor for the American Dental Association. Dr. Steinberg is Professor and Assistant Director of Dental Medicine at the Medical College of Pennsylvania and has been selected as one of twelve ADA spokespersons responsible for discussing dental health care issues with the media.

Barbara J. Steinberg

Thomas R. Tempel, Major General, US Army Dental Corps, was appointed Assistant Surgeon General (Dental) and Chief, Army Dental Corps. General Temple received the Distinguished Service Medal for his work as Deputy Commander, 7th Medical Command, US Forces, Germany.

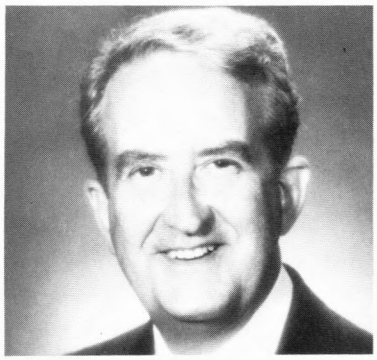
Thomas R. Tempel

Prem S. Sharma was recently recognized by the Wisconsin Chapter of the Pierre Fauchard Academy with a presentation of its Distinguished Service Award. Dr. Sharma was honored for his many years of outstanding and dedicated service to the dental profession, to dental education and to his community. Dr. Sharma is the Associate Dean for Academic Affairs at Marquette University School of Dentistry and ACD Regent for Regency 5.

Eugene J. Truono, President of the American Dental Association, was honored by the Albert Einstein Medical Center's Maxwell S. Fogel Department of Dental Medicine at the Department's Annual Dinner and Graduation.

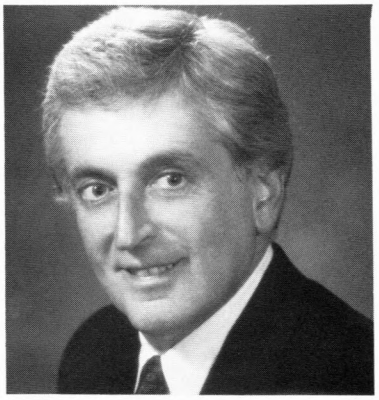
Photographed from the left are: Alan J. Borislow, Chairman, Department of Dental Medicine, Eugene J. Truono, Stephen J. Korn, Chairman, Board of Directors, Albert Einstein Healthcare Foundation; John Lathrop, President, Pennsylvania Dental Association and Jules Einghorn, Immediate Past President, Philadelphia County Dental Society.

Donald G. Woodside was the recipient of the Albert H. Ketcham Award presented by the American Board of Orthodontists for distinguished accomplishments in the specialty. Dr. Woodside has served as the Head, Department of Orthodontics, University of Toronto since 1962 and received an honorary doctorate from the Karolinska Institute in Stockholm, Sweden in 1989.



Donald G. Woodside

Arnold S. Weisgold received the University of Pennsylvania's Provost Award, a University-wide award recognizing the distinguished teaching of one health professional each year. Dr. Weisgold is Director of Postdoctoral Periodontal Prosthesis at the University of Pennsylvania School of Dental Medicine.



Arnold S. Weisgold

Photographed at the Pierre Fauchard Academy's luncheon in Milwaukee are from the left: Prem S. Sharma, the recipient of the Distinguished Service Award, James A. Englander, Chairman of the Wisconsin Chapter of the Pierre Fauchard Academy, Foster Bens, National President of the Pierre Fauchard Academy and Robert E. Doerr President of the American College of Dentists.

SECTION ACTIVITIES

Alabama

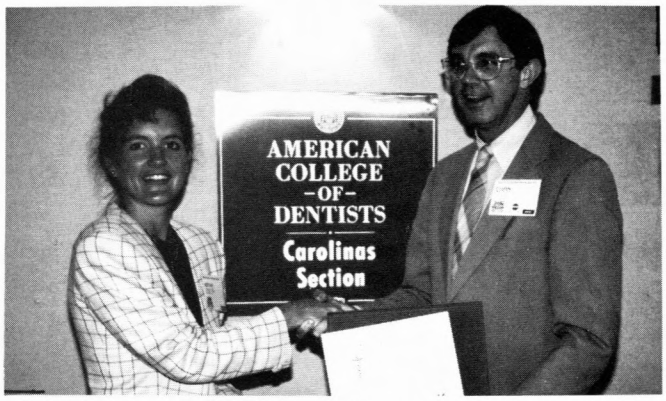
The Alabama Section consists of 39 active Fellows and 15 Life Members. It conducts several activities to help promote the goals of the College. During 1990 the Section contributed $1000 towards the sponsorship of a two day workshop in dental ethics at the University of Alabama School of Dentistry, Birmingham. The workshop, conducted by Muriel J. Bebeau of the University of Minnesota School of Dentistry, resulted in a curriculum on professionalism and ethics that was implemented at the School of Dentistry shortly after the workshop. As a part of this curriculum fifteen Fellows of the Alabama Section meet with small groups of dental students to discuss ethical problems encountered in private practice.

The Section also presents an award to a student for an outstanding table clinic at the Annual Alabama Dental Alumni Weekend where it also sponsors a free continuing education course for dentists. In addition the Section presents a plaque and a cash award to an outstanding graduating dental student of the University of Alabama School of Dentistry.

Carolinas

The Carolinas Section held its North Carolina meeting in North Myrtle Beach and its South Carolina meeting in Charleston.

E. Thomas Kays, Vice Chairman of the Carolinas Section, presented the Student Leadership Award to Philip Prickett.



Dudley C. Chandler, Jr. Chairman of the Carolinas Section presented the Student Leadership Award to Kathleen Boyd.

Hudson-Mohawk

The Hudson-Mohawk Section at its Spring meeting recognized one of its Fellows, Nathan Feltman, from Albany with the presentation of an award for Outstanding Service to the Section. The meeting was attended by ACD Executive Director Gordon H. Rovelstad and Regent Edward C. McNulty of Regency I.

Photographed at the Hudson-Mohawk Section's meeting are standing from the left: Robert C. Westcott, John P. Essepian, John W. Ehrcke, Michael E. Fleming, Donald F. Wallace, ACD Regent Edward C. McNulty, Gerald A. Ripp, John F. Rowland, Jr., Edward F. Whalen, Robert H. Hill, II, Samuel J. Coppola, John R. Moon, Nathan Feltman and Michael Breault. Seated from the left are: William B. Smith, Jr., Vice Chairman Arnold A. Ruxin, Chairman Ernest F. Reimann and ACD Executive Director Gordon H. Rovelstad.

Florida

The Florida Section held its annual meeting in conjunction with the Florida National Dental Association Congress in Orlando. Section Chairman Robert W. Williams presided and the meeting was attended by over one hundred Fellows and guests including ACD Past President Robert W. Elliot, Jr., ACD Treasurer Chris C. Scures, ADA President-Elect Geraldine T. Morrow, ADA First District Trustee Jack S. Opinsky, Fifth District Trustee Heber S. Simmons, Jr., Pierre Fauchard Academy International President Foster W. Bens and American Academy of Pediatric Dentistry President Jerome B. Miller.

An award was presented to a graduating senior dental student for displaying outstanding ethics and professionalism and nine Fellows of the Section received ACD pins commemorating 25 years of continuous Fellowship. Fellow Louis J. Atkins spoke on "Ethics and Professionalism—It's Relevance to Today's Society."

Photographed at the Florida Section's Meeting are from the left: ADA President-Elect Geraldine T. Morrow, ACD Past President Robert W. Elliott, Jr. and ACD Treasurer Chris C. Scures.

Photographed from the left are Florida Section's Chairman Robert W. Williams, Speaker Louis J. Atkins and Florida Section's Vice Chairman Jose E. Medina.

Section Chairman Robert W. Williams presented an award to Donald W. Legler, Dean, University of Florida College of Dentistry for his role in inculcating ethics and professionalism into the curriculum of the College of Dentistry.

Oregon Section

The Oregon Section conducted three meetings during 1990-91 and at its first meeting elected the following officers: Chairman Charles A. Gutweniger, Chairman Elect Richard M. Bates and Secretary Evelyn M. Strange.

Photographed at a recent meeting of the Oregon Section are: Fellows Vernon Manny, Walter Johnson, James Tinkle and Charles Gutweniger.

Wisconsin Commemorates First Annual Meeting of the College

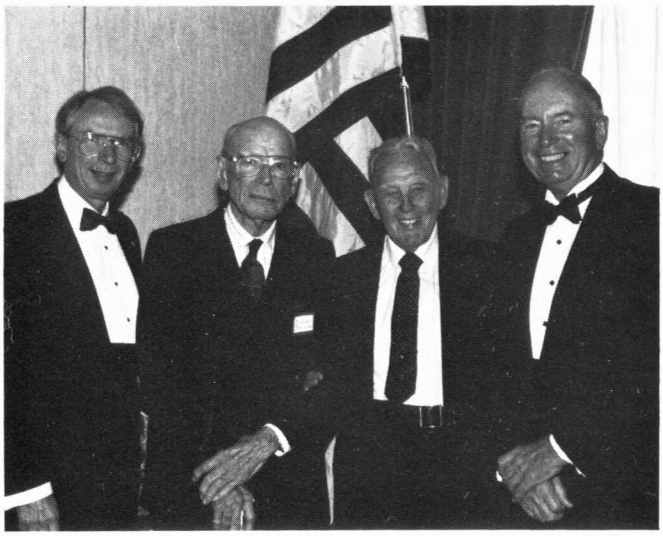
The Wisconsin Section commemorated the 70th Anniversary of the first annual meeting and convocation of the American College of Dentists which was held in the Pfister Hotel in Milwaukee on Saturday, August 13, 1921. ACD President Robert E. Doerr and Mrs. Mary Doerr were present and a large number of Fellows and guests attended a business meeting and a gala banquet in the same ballroom where 70 years earlier founders of the College had gathered to confer Fellowship upon a small group of dentists invited to join the College.

The Wisconsin Section welcomed eight new Fellows who were inducted into the College in Boston and announced the names of ten who will receive Fellowships in Seattle. ACD President Doerr gave a presentation on the current activities of the College and the Wisconsin Section made a contribution to the *Campaign for the 90's*.

The business meeting was followed by an ACD/ICD banquet at which time ICD President Neal Newton and ICD Regent Charles Ziegler, both Fellows of the ACD, congratulated the Wisconsin Section on its 70th Anniversary celebration. Some of the other special guests in attendance were ACD Regent Juliann S. Bluitt, Regency 4, and ACD Fellow Foster Bens who is the International President of the Pierre Fauchard Academy.

The Wisconsin Section presented Dr. Doerr with a collection of letters written by ACD officers in 1920 and 1921 to finalize the arrangements for the first annual meeting of the College in Milwaukee. The letters were exhibited in a very attractively designed display case and will be kept in the Executive Office of the College in the future.

President Doerr installed the following Wisconsin Section Officers for 1990-91: Chairman Russell T. Kittleson, Vice Chairman Elise Sampson, Secretary Donald F. Pricco, Editor George E. Rooney, Jr., and Immediate Past President Claude I. Sime.



Photographed at the Wisconsin Section's meeting are from the left: Section Chairman Claude Sime, Chester I. Perschbacher, Thomas R. Abbott (both Life Fellows) and ACD President Robert E. Doerr.

Photographed at the Wisconsin Section's meeting are from the left: Section Chairman Claude Sime, ACD Regent for Regency 4 Juliann Bluitt, Elise Sampson, Russell Kittleson, ACD President Robert E. Doerr, Donald Pricco, ACD Regency 5 Regent Prem Sharma, George Rooney, Harry Blumenfeld and Foster Bens, International President of the Pierre Fauchard Academy.

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American College of Dentists

OFFICE OF THE SECRETARY
122 S. MICHIGAN AVENUE
CHICAGO

July 26, 1921

Dr. H. L. Banzhaf
1207 Wells Bldg.
Milwaukee, Wisconsin

Dear Dr. Banzhaf:

The annual meeting of the American College of Dentists will be held at the Hotel Pfister, Milwaukee, on Saturday August 13 at ten A.M.

The report of the Board of Directors on the objects of the College, the qualifications for membership, and the presentation of a list of newly elected members will constitute the principal business of the session. Officers will be elected.

A dinner has been arranged for all of the Fellows at 6:30 P.M. at the Hotel Pfister. On this occasion Dr. C. N. Johnson will deliver an address on "Educational Ideals in Accordance with the Aspirations of the American College of Dentists." The President will confer Fellowships on the newly elected members.

We are very anxious to have a full attendance.

Very sincerely yours

A. D. Black

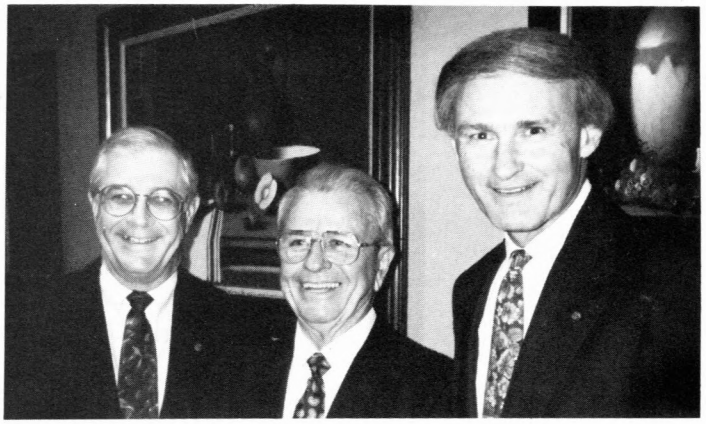
ADB:MSC

Secretary.

Among the ACD letters from 1921, that were presented to the Executive Office by the Wisconsin Section, was this one written July 26, 1921 by Arthur D. Black, Secretary of the College, to Henry L. Banzhaf, the Dean of Marquette University School of Dentistry in Milwaukee.

Mississippi

The Mississippi Section conducted its Annual Meeting recently in Jackson with Section Chairman Mark W. Blackburn presiding. The Section presented an outstanding student award for academic excellence to a student from the University of Mississippi School of Dentistry and, in addition, presented an outstanding faculty award to Dr. Willie Hill.



Photographed at the Mississippi Sections meeting are, from the left, Section Officers Chairman Mark W. Blackburn, Vice Chairman Harry D. Halliwell, Jr. and Secretary/Treasurer Robert T. Ragan.

Metropolitan Washington

The Metropolitan Washington Section honored ACD Fellow and Congressman Ronald C. Packard at the Section's meeting in Washington, D.C.

Congressman Ronald C. Packard, who is a Fellow of the American College of Dentists, photographed with Aida A. Chohayeb Vice Chairman of the Metropolitan Washington Section.

Montana

The Montana Section held its Annual Meeting recently in Missoula and welcomed seven new Fellows. ACD Regency 8 Regent Charles V. Farrell of Billingham, Washington was in attendance at the meeting.

Photographed are Montana Section Officers from the left: Frank V. Searl, Vice Chairman; David L. Movius, Chairman; Regency 8 Regent Charles V. Farrell and Stephen R. Dailey, Secretary/Treasurer.

Upper Midwest

The Upper Midwest Section held its spring meeting in Minneapolis which was attended by a large number of Fellows and guests. Chairman Donald S. Benson presided and the Fellows heard from ADA President Eugene J. Truono and ACD President Robert E. Doerr.

The Midwest Section initiated a "Free Dental Cooperative Educational Program" in 1989 in three colleges and this year implemented the program at a fourth institution. Fellow George Humphrey was given recognition as the originator of this innovative program where Fellows of the Section provide a liaison between predental students at various educational institutions and the University of Minnesota School of Dentistry. The following officers were installed for the 1990-91 year: Chairman Kenneth J. Buechele, Vice Chairman Douglas A. Nelson, Secretary/Treasurer Odin M. Langsjoen, Second Vice Chairman James R. Jensen and Third Vice Chairman Donald W. Johnson.

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