Current concepts in DENTAL HYGIENE

Edited by
SUZANNE STYERS BOUNDY
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To

those who believe
that it is the responsibility of a
professional to be a continual student—our students
past, present, and future

Preface

Unless an author believes that the production of a book is in the best interests of some audience, the time and effort spent on it would seem fruitless. When the concept of this book was suggested, the project seemed so logical that there was no way to go but forward. The articles contained in *Current Concepts in Dental Hygiene* were the brainchild of the editors. They are needed to fill a void in the literature, since progress has moved a step or two ahead of the printed word.

This book is in no way offered as a final or static production. As timely topics loom new on dental horizons, the book will be altered and updated to keep pace and to provide a continuing source of valuable information.

In our opinion, the authors selected for the individual articles provide a star-studded cast, each knowledgeable and expert in his or her own right. They were carefully chosen to make this not only the first of its kind but also a scholarly text that can be used with complete confidence.

If this effort results in making the profession a little stronger or the public a little healthier and if it motivates one person to improve the quality of life, then the work was well worth the doing. That, after all, is the goal of this great profession—to serve mankind and along the way to help one another.

Suzanne Styers Boundy

Nancy J. Reynolds

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1

The changing role of the dental hygienist

PATRICIA FAUST JONES

Health care delivery is the focus of much discussion, is the subject of many articles in the literature, and is of considerable concern to consumers, lawmakers, health planners, and practitioners. Change in the delivery system seems inherent in responding to concerns.

Rogers, Toffler, and Gardner each point out that change is occurring in many fields at an exponential rate. Rogers writes that we cannot rely on the past for answers but must search for new ones to meet the challenge of change.[49] Toffler emphasizes that people do not have easily defined single functions but must be multifunctional to respond to change.[52] Gardner contends that in an ever-renewing society maturity might be measured by the degree of continuous innovation and rebirth that can occur.[28]

Dental-care delivery is a component of the health-care system, which is in the process of maturing. This chapter was prepared to provide the reader with a logical perspective on the changing role of the dental hygienist in the dental-care delivery system in the United States.

BACKGROUND AND TRADITIONAL ROLE OF THE DENTAL HYGIENIST

The early development and utilization of dental auxiliaries by the dental profession was slow. It was 26 years after the 1859 organization of the American Dental Association (ADA) before the use of a dental assistant in dental practice was recorded, and 47 years before the first dental hygienist was trained and subsequently licensed for a role in dental-care delivery.

Dental hygiene as a practice is about 70 years old; however, the concept dates back to an 1845 editorial in the *American Journal of Dental Science* that stated that dental therapeutics, surgery, and prosthetic dentistry had been cultivated all over the world, but the hygiene of the teeth had been "almost wholly neglected."[22]

D. D. Smith of Philadelphia instituted a prophylactic program for patients in his dental practice in 1844. Through his teachings other practitioners became

convinced of the merits of providing preventive services to their patients. However it was 1903 before M. L. Rheim of New York first recommended to the Dental Section of the American Medical Association the utilization of women, adequately trained and licensed as "dental nurses" to perform dental hygiene functions.[26]

In 1906 Dr. Alfred C. Fones of Bridgeport, Connecticut, personally trained his own office assistant, Mrs. Irene Newman, to perform oral prophylaxis and provide dental health education for patients. Seven years later Dr. Fones undertook the development of the first school for instruction in dental hygiene. The purpose of this program was to prepare young women to be utilized as hygienists in school programs in which children would receive preventive treatment.[26]

Education of the dental hygienist

When Fones[26] trained the first dental hygienists in a formal program, the minimum requirement was 1 year of instruction. At that time, apprentice (on-the-job) training may well have been considered, but the idea was discarded in favor of a formally trained person.

A few dentists encouraged the development of a new auxiliary role, and women's interest in dental hygiene as a profession grew after 1913. New schools were started at Columbia, Eastman, and Forsyth in 1915 and 1916.[15] Fourteen schools were initiated between 1913 and 1946. Since 1946 and especially after the surge of community college development and federal support for allied health programs in the 1960s, dental hygiene program growth has been rapid. Table 1 indicates growth in numbers of programs and increased output from 1946 to 1975.

Prior to 1949, there was little similarity among the educational programs in dental hygiene. The development of educational standards initiated the far-reaching changes that have occurred in the past 25 years. Educational requirements for accreditation of dental hygiene programs were adopted by the American Dental Association in 1951, with subsequent revisions in 1965 and 1973. Completion of a college-preparatory high school program, or its equivalent, is an essential admission requirement of dental hygiene programs although about one of every five programs requires some college for admission to dental hygiene. The Council on Dental Education of the American Dental Association prescribes the basic curriculum for all approved dental hygiene programs. Students in both accredited 2- and 4-year schools receive the same basic education in dental hygiene.[6] In general, courses fall into three categories: basic and dental sciences, clinical dental hygiene, and liberal arts. Students may earn an associate degree

Table 1. Dental hygiene education programs—selected years (1946-1976)[3]

Year	Number of programs	Graduates	Year	Number of programs	Graduates
1946	17		1967	71	1739
1950	25	529	1970	123	2465
1955	35	856	1973	133	4137
1960	38	992	1976	163	5250
1965	58	1492			

or certificate from the 2-year program or a bachelor's degree from the 4-year program. The master's degree in dental hygiene, public health, education, and other fields may be pursued by the dental hygienist. An increasing number of hygienists are qualifying as teachers and administrators. Continuing education is becoming an important component of dental hygiene practice and in a few states, necessary for relicensure.

Credentialing of the dental hygienist

The first licensure law governing the practice of dental hygiene was passed by the State of Connecticut in 1916. By 1920, nine additional states had passed similar legislation.[26] In 1950, 47 states had legalized the practice of dental hygiene, and by 1955, dental hygiene was recognized in all the states as well as the Commonwealth of Puerto Rico and the Virgin Islands.[15] Dental hygienists are required to pass state licensing examinations in order to practice their profession. The examinations consists of both didactic and clinical performance examinations to test the knowledge and competency of the applicant. The National Board examination in dental hygiene was developed and first administered in 1962 to assist state examiners with the written testing of candidates' knowledge of the sciences related to dental hygiene.[9] By 1975 all states, except Delaware, accepted the didactic examination given by the Council of the National Board of Dental Examiners, in lieu of the individual state's written examination for dental hygiene licensure.[16]

Education and credentialing requirements in Alabama differ from all other states. In that state preceptorship (on-the-job) training is accepted as adequate preparation for the performance of intraoral dental hygiene functions. Auxiliaries trained by the preceptorship method may be licensed only by Alabama and do not meet dental hygiene licensure requirements in other states.

Beginning in 1969, multistate regional clinical examinations for dental hygiene licensure have been developed and administered in the northeast, central, and southern regions of the United States. Regional examinations reduce the repetition of clinical evaluation for the candidates seeking licensure in more than one state of a given region. Within each regional board jurisdiction, a successful candidate will receive credit for the clinical examination from all participating states.[9]

All dental hygiene licensure laws require that the dental hygienist work under the direction or supervision of a licensed dentist. In all states, the dental hygienist has been legally delegated functions related to oral prophylaxis and health education and in some states the administration of anesthesia and selected restorative functions are also delegated to this auxiliary.[33]

Practice of the dental hygienist

Dental hygienists serve as oral health clinicians and educators who aid the public to develop and maintain optimum oral health. As members of the dental health team, dental hygienists may perform preventive and therapeutic direct patient-care services under the supervision of a dentist. Dental hygienists are the only licensed dental auxiliary and specific responsibilities vary, depending on the dental practice act of the state in which the hygienist is employed.

Ten graduates of the first dental hygiene class of 33 students were employed by the Board of Education of Bridgeport, Connecticut. With this employment a dental health program in the city schools became operative. In this first dental public health program in dental hygiene, the hygienists presented toothbrush drills and classroom talks, carried on oral prophylactic programs and charted dental conditions of children.[26] Although originally intended for utilization in education and public health, the value of the dental hygienist was soon realized by dentists and the demand for this auxiliary increased. By 1975, of 52,000 licensed dental hygienists, 32,000 were actively practicing.

A nationwide survey of dental hygiene practice patterns has not been conducted since 1966. However, a Michigan study[42] conducted in 1975 may be an indicator of a national trend in dental hygiene practice.

In the survey of licensed dental hygienists in Michigan, 90% responded. Nearly 74% of the respondents reported that they were currently employed as dental hygienists. Of the population, 74% also reported that they had worked 75% or more of the years they could have worked since licensure. Seventy-six percent of those responding indicated they were currently employed 20 or more hours a week; mean reported hours was 28.3, median was 35 hours and mode, 40 hours.

Of the 91% who reported to work in private practice, almost 4% worked for periodontists. Nearly another 4% worked in other specialty practices. Nonprivate practice positions represented only 1 in 10 dental hygiene jobs in Michigan, and 70% of the people who held such jobs had earned a single associate degree or certificate in dental hygiene.

Almost 88% of the Michigan respondents were compensated for their work by salary and 12% by commission. And finally, 74% of those employed in private practice worked only in one office.

Although the Michigan figures should not be interpreted to answer questions regarding nationwide practice patterns of dental hygienists, they can be utilized as indicators of the commitment dental hygienists have to the profession and to the public they serve.[42]

For many years most dental hygienists have been employed in private dental offices, and for more than 50 years there has been little change in role and function of the dental hygienist in dental-care delivery.

Seeking professionalism for dental hygiene

The American Dental Hygienists' Association was organized in Cleveland, Ohio in 1923 by a group of 46 dental hygienists representing 11 states. In 1976 there were 27,000 active and student members of the association, representing 51 constituent associations and approximately 114 component societies.[17] The association serves and represents the membership in matters of education, research, dental hygiene practice, legislation, and long-range planning. As the only national organization representing dental hygiene, the ADHA has assumed responsibility for essential activities to preserve the dental hygiene education and credentialing system and for the advancement and refinement of that system.

The existence of the association serves as a base on which to establish dental hygiene as a profession, as does the journal *Dental Hygiene* and the principles

of ethics set forth by the membership. Autonomy, a fourth factor of professionalism may be one barrier that persists to restrain dental hygiene from full professional status. The components of autonomy that are generally deemed necessary to reach status as a profession include the ability (1) to control licensure, (2) to determine functions, (3) to admit and control functionaries, (4) to exert legislation or statutory control, and (5) to operate free from external evaluation and control.

The role of the dental hygienist as the operating auxiliary in dental-care delivery has always been directly related to the role of the dentist. It is unlikely that as auxiliaries' roles in providing dental care are extended that it will be either functional or politic for dental hygiene to become autonomous from the specialized field of dentistry. It is more likely that dentists and auxiliaries will become increasingly dependent on the other and develop closer professional liaison and greater team support both in practice and in professional organization. The evidence that supports this concept is observed in the increasing numbers of dental hygienists who serve as members of boards of dentistry or consultants to boards. The influence that the consumer may have on increasing mutual support between dentists and auxiliaries is yet undetermined but predictably may increase such a potential.

It is when a profession organizes to ensure public rather than personal or occupational self-interests that the fifth factor of professionalism, service, exists. That which the professional does in the public interest represents the profession's service orientation or ethicality. After putting into proper perspective that the direct consumer of dental hygienists' services is the employer-dentist, service to the patient must be the primary concern of the professional dental hygienist.

RATIONALE FOR A CHANGING HEALTH-CARE DELIVERY SYSTEM

In recent years, the total annual expenditure for health-care services in the United States has exceeded $115 billion, including $8 billion annual expenditures for dental services. Despite these huge financial expenditures, the United States has been slipping behind other industrial nations according to the "accepted" indices of health.[18,19,25]

Consumer concern for health

The imbalance between the needs and demand for health care and the supply of health services and the resultant pressures for change from consumers, providers, and legislators have created what may be termed a "health crisis." The literature reveals that consumers in the United States believe that there is a health-care crisis of at least three dimensions: accessibility, quality, and cost.[18,20] Many consumers, particularly the inner city poor and those in rural areas, lack access to the services that could prevent disease and illness. Health manpower is poorly distributed to serve these populations. Consumers increasingly perceive a crisis in the quality of the health care they receive. Care providers are being held more accountable by a better-informed public. The cost of health care has increased and continues to increase in an atmosphere of

national economic instability. Economic concerns force the public to alter priorities and consumer involvement.

Consumers no longer wait to be surveyed about their concerns and preferences, but they lobby in the halls of Congress and in state and local government agencies. Consumers in the American bicentennial year were more aware, more vocal, and more critical—demanding progressive and innovative provisions for health care.

Factors that have an impact on manpower requirements

In relating this general health-care crisis to the area of oral health care, the literature is abundant regarding factors that will have an impact on the ability of the public to obtain reasonably the dental care it needs. Briefly, these factors are as follows:

- In 1976 within this country's approximately 210 million population, there were approximately 112,000 practicing dentists.[31]
- In a given year, only about 49% of the population sees a dentist for any purpose.[31]
- The population of the United States is projected by the Bureau of the Census to be approximately 264 million in the year 2000.[45] If only half of the population continues to seek dental care, dentistry still must be prepared to treat 30 million more patients.
- Although cost of living has increased measurably, the income that the average family received in 1950 has almost doubled and the gross national product in 1980 will have doubled the 1950 figure.[44]
- Approximately 50% of high school graduates seek advanced training or education in contrast to a generation ago. As educational status increases, people appear to become more interested in, and better able to purchase, health care.[44]
- Best DHEW estimated number* of beneficiaries of privately sponsored dental-care plans in April 1976 was 31 million, with substantial indication that dental coverage in the future will increase.
- The impact of fluoridation, new breakthroughs in research and technology, evaluation of emphasis in dentists' practices, and lengthening life span are difficult to assess but appear to total an increased demand for dental services.
- In recent years the news media have devoted more time and space to health and disease. This contributes greatly to a health-oriented society with more awareness of the benefits of prevention. In the future, public interest in prevention may become a highly significant factor in the altered delivery of health services.
- Of all the sociologic forces likely to have influence on manpower requirements in the future, government involvement, either directly through programs for specific groups such as the elderly, children, or the disadvantaged, or indirectly through legislation leading to a national health program, can be expected to play a greater role in determining patterns of health-care delivery.

*Based on Social Security Administration 1973 and ADA 1975 figures.

Need-demand for dental care and maldistribution of manpower

There are several comprehensive documents that state that there is a dental manpower problem.[11,19,21,43] Given the acceptance of the concept that a dental manpower problem does exist, a legitimate argument remains as to its seriousness or magnitude. The misunderstanding and disagreement surrounding the demand-versus-need issue illustrate that some data represent only a partial expression of current demand. There is a deficiency of data that relate manpower shortage to percentage of the population visiting a dentist annually, the average annual patient load per dentist, and the average number of visits per patient. Not only should the current demand for dental care form a basis for manpower planning, but the existing need for dental care also must be considered. Latent demands are defined as the unmet needs that can be converted into active demands for dental care, beyond those currently being made by the public. Today there is argument on both sides of the question on whether the dental profession is able to meet the demands of the population. Should education, economic upswing, national health insurance, or other unidentified means tend to activate latent demand for dental care, it is fairly certain that the accessibility to care and the cost of the care that is available will present serious problems for the nation. It is in the public interest to take measures today that will likely minimize the possibility of routine dental care's becoming difficult to obtain, either because of its limited availability or its prohibitive cost.

Maldistribution of dental manpower is a matter that is not argued about in this country. There is general agreement that uneven distribution of all health professionals prohibits equal access to health care by the public. The lack of health manpower in rural and in inner-city urban areas has been determined a major problem in health-care delivery. A means that will entice even the underemployed professionals to provide care to people in underserved areas has not been identified. There is very little incentive for students who grew up in underserved areas to return to those areas after dental or auxiliary education. Patient education has been ineffective in many underserved areas, and the public is not motivated to activate a demand for dental care. Research should be conducted to test incentives that might encourage dental manpower to practice in underserved areas.

In the future the manpower problem may be one not of numbers, but one of effective placement and efficient utilization of manpower.

Methods to meet manpower requirements

Increasing the numbers of practicing dentists is one method for meeting an anticipated increase in demand for dental services. However, efforts to increase the numbers of dentists graduated must include a consideration of the limited availability of student spaces in dental school, the length of time necessary to educate a potential practitioner, and the high cost associated with this education.[32]

The efficient utilization of dental hygienists and dental assistants and the expansion of their roles as care providers have been identified as alternatives to increasing the numbers of dental school graduates to meet manpower requirements.

Studies have been conducted that support a rationale for delegating to auxiliaries intraoral procedures that were traditionally performed by the dentist and dental hygienist. The research identified specific dental functions (predominantly restorative) for delegation that became known as expanded functions for auxiliaries.

Results of numerous studies have confirmed (1) that the quality of the direct patient care provided by an auxiliary is excellent,[2,23,30,37] (2) that the use of auxiliaries increases productivity or output of services,[1,34,38,40] and (3) that auxiliary utilization could contain costs of providing care at the current or lower level.[25,36,37,50,51]

In all of the studies that measured patient acceptance, attitudes were favorable toward the concept.[24,39,47,51] Although there is little data to help determine how dentists accept dental hygienists and dental assistants performing expanded functions, it appears that dentists who utilize auxiliaries support the expanded role concept and those who do not use expanded function auxiliaries may question some aspect of the concept. Changes in state dental practice acts in recent years indicate that dentists accept some revision in utilization patterns for dental hygienists and dental assistants.

Utilization of dental auxiliaries as the acceptable method for meeting anticipated manpower requirements can be supported also, in consideration of the fact that shorter educational periods are required for auxiliary preparation as compared to doctoral education. This condition could reduce the overall manpower-training expenditures or could allow training of greater numbers of care providers for the same funds expended. The auxiliary workforce is potentially more flexible than the dental workforce.

PROGRESSIVE CHANGE

It has been estimated that the total knowledge of mankind about arts, science, and all the areas of human inquiry doubled over the century and a half between 1750 and 1900. It doubled again between 1900 and 1950—only a half century. It doubled still again between 1950 and 1960—in only a decade. It doubled yet again between 1960 and 1968 and, in all likelihood, has probably doubled again through 1976. Thus, change and the knowledge explosion that feeds it are accelerating at a geometric rate while most of our social organizations, institutions, and individuals experience discomfort, discontinuity, and "present shock."[41]

Dentistry is a young profession. Predictably, significant change in the profession since it was established has been slow by many comparisons.

Research in dental auxiliary utilization

It was during the 1940s that meaningful data about the value of using dental auxiliaries began to be available. In 1943 Klein wrote about the effect of the war effort upon the capability of civilian dentists to provide care. He observed that increased productivity was made possible both by the dentists' use of a multiple-chair rather than solo-chair office, and by their employing dental assistants.[34]

The Waterman Study in Richmond, Indiana, confirmed the estimates made by Klein that the numbers of patients treated could be increased by nearly 70% when two traditional assistants and two chairs were utilized.[53] Additional stud-

ies in Woonsocket, Rhode Island,[35] and in Gainesville, Florida,[27] supported the results reported by Klein and by Waterman.

By the early 1950s, it was not only known how profitably auxiliaries could be employed, but how necessary it was to do so because at the time a population increase was recognized and a growing shortage of dentists had been delineated. As a result of expressed concern about more effective utilization of auxiliary personnel, pilot studies in dental auxiliary utilization began in six dental schools in the midfifties. From 1961 to 1972, federal grants were awarded to schools of dentistry to support programs for teaching dental students to utilize dental assistants efficiently. That effort, known as the Dental Auxiliary Utilization (DAU) Program, has promoted improved delivery of services through training in "four-handed dentistry." DAU programs have developed in all dental schools and are required as prerequisite to dental-school Training in Expanded Auxiliary Management (TEAM) programs, and the teaching of four-handed dentistry techniques is a growing priority in dental-assisting and dental hygiene programs.

Evolution and resolution

Because of the successful results of the experiences with auxiliary utilization in the 1940s and 1950s and because of the pressing dental manpower needs occurring in those decades, the beginning of the 1960s saw some progressive movement by organized dentistry in the area of auxiliary utilization.

In 1961, the ADA House of Delegates approved a policy statement on the experimental training and effective utilization of dental hygienists and dental assistants.[7]

By 1966, the ADA Council on Dental Education, recognizing the need for a stronger expression of the dual responsibility of the profession and its educational institutions in developing more effective use of auxiliaries, submitted additional resolutions delineating the profession's responsibilities.[12]

Again in 1967, the Council on Dental Education, together with the Council on Dental Health and Legislation, proposed a resolution, subsequently adopted by the House, "that constituent dental societies and state dental examining boards consider recommending revision of dental practice acts to give their examining boards authority to prescribe rules and regulations to achieve more effective utilization of the services of dental hygienists and, further, that the state dental examining boards consider the educational standards established by the American Dental Association in determining the qualifications of dental hygienists and dental assistants to perform functions prescribed within the rules and regulations of the board."[13]

By 1969, it had become clear that some form of coordinated national leadership was required if any significant progress was to be made to expand the role of auxiliaries. At the Conference of Dental Examiners and Educators it was suggested that an interagency group was needed to determine guidelines for the assignment of duties and the establishment of educational standards.[4]

The ADA Council on Dental Education at the May 1969 meeting established the Inter-Agency Committee on Dental Auxiliaries with representation from the American Dental Association, American Association of Dental Examiners, American Association of Dental Schools, American Dental Hygienists' Association,