Possibilities and Means of Improving Dental Conditions in the United States*†

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IMPROVING dental conditions in the United States I assume means preventing dental disorders in children with the hope that as they reach maturity they will have healthy mouths and sound teeth, functioning normally and with comfort, which they may retain throughout life. On this subject I present a dental educator's point of view.

Improving dental conditions in bygone centuries consisted chiefly in relieving pain. Sporadic attempts in restorative dental art are recorded. About 250 years ago mechanical procedures came into vogue and the esthetic phase also gained some recognition. Only the wealthy or royalty received attention.

Complications arose because of biological unknowns. Then, with the advancement of biological and physical science and progress in technical skill and art, dentistry came to be recognized as a profession. Still the emphasis was laid on restoration and replacement.

At the beginning of the present century, dental faculties considered bacteriology of enough importance to warrant its introduction into their curricula. Putrefaction was known but not fully understood until this science brought forth the explanation. Other sciences—pathology, physiology, anatomy, biochemistry, metallurgy, and chemistry—added their contributions to the changing course of study.

About 50 years ago the preventive aspects of dental service began to be discussed and programs were initiated, notably in Strassbourg, Germany, and in Rochester, N. Y. As related to school children in America, this means of improving dental conditions developed slowly until 1910 when it swept from east to west across the country like an epidemic.

In many places the dental schools took an active part in this movement. Besides their participation in the organization of school dental clinics and in making school surveys, the preparation of persons to render more and better service in preventive dentistry was undertaken. The first courses for the training of dental hygienists were organized by Dr. A. C. Fones, of Bridgeport, Conn., in 1913. The idea spread until there are now 19 institutions offering instruction in this field and 32 states have licensed these hygienists.

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† See also Editorial on page 375 of this issue for comments and varied opinions on this subject.

At first 1 year of high school constituted the admission requirement, followed by 1 year of professional training; a certificate was granted to those completing the course. Admission requirements were advanced gradually in some institutions to high school graduation, followed by 2 years of professional training, again leading to a certificate. Now in the University of California, 4 years of collegiate training are required for graduation and a degree of Bachelor of Science is granted. These trainees are health educators, supplementing in some instances their health education program with a prophylactic service.

Many dental hygienists are employed in private offices, where the educational program, if carried on at all, is individual. Office duties consist chiefly in periodic prophylactic service for adults, which has value in preventing the recurrence of dental disease. More can be accomplished in the prevention of dental disease by rendering prophylactic service to children at frequent intervals and they should be considered the most important group in the private practice clientele.

The health education programs which have been developed in the schools by dental hygienists have not accomplished all that was hoped, although some of them have been more efficacious than other types of programs. Hawaii is our best example of accomplishment.

Soon the possibilities of improving dental conditions in childhood through dental practice became evident to the dental educators, and dental students were all required to attend courses in children's dentistry. Didactic instruction was supplemented by clinical practice on children, and more recently technic courses in relation to the morphology of the temporary teeth and operative procedures have been required in the schools. Refresher courses for practising dentists, dealing with preventive dentistry especially for children, have been set up by dental organizations and departments of health throughout the country.

Dentists in practice began to specialize in children's dentistry. A pedodontic society was organized, later becoming the American Society for the Promotion of Dentistry for Children. It now publishes a periodical.

One dental school offers an optional curriculum with emphasis on the prevention of dental disease. The students registered in this course are not required to complete courses involving the replacement of missing teeth during the last 3 years of the curriculum. By substituting orthodontics for prosthesis, they may qualify for graduation and receive the degree of Doctor of Dental Surgery. The major part of their clinical experience in college and subsequently in practice is with children and young adults.

So much for the history of the development of the educational phase of improving dental conditions. What about the present need for improving dental conditions, or more pointedly speaking, preventing dental disease?

The health education programs conducted by dental hygienists have in some localities proved to be very effective in stimulating interest in taking care of the teeth. But these programs do not cope with the problem of providing service for children with decayed teeth and other dental lesions. Without some sort of educational activity, the effective demand for dental service is very low, for several reasons: ignorance, fear, inconvenience, and costs. But when interest is aroused, service for children should be available.

Fairly reliable estimates indicate that there are about 30,700,000 children aged 2 to 14 years, inclusive, and about 12,000,000 more aged 15 to 19 years, inclusive, in the United States. Most of them are in school or college. This group of 42,700,000 represents

about one-third of our population. All of them need some kind of dental service every year. If each of these children received 4 hours' dental service on an average each year, it would require the services of 89,000 dentists working 40 hours a week for 48 weeks a year to care for them. Each dentist would care for about 500 children a year. There are about 71,000 dentists licensed to practise in the United States, of whom perhaps 65,000 are actively engaged in private practice.

If a program of service for children were put into effect, the adult population would have to be forgotten in so far as dentistry is concerned. Would the older patients yield to the children? I doubt it. And the possibility of securing service for all is not likely to improve, for the number of students attending dental schools is now much smaller than it was 10 years ago, so that as the older practitioners retire there will be fewer young men to replace them.

What about dental equipment? During the last score of years dental manufacturers have devoted their attention to the refinement and embellishment of dental equipment, materially adding to the cost until a single installation may cost from $2,000 to $5,000. A recent survey by the New York State Dental Society [1] states that the average cost of equipment is $5,260.

One health officer I called upon in September, 1937, induced a group of dentists in his community to accept a plan whereby each would render a volunteer service, giving ½ day each week in a central office. The dentists submitted for this a list of equipment and instruments which would cost $5,000. He had $600 in reserve to equip the dental office with used furniture and so advised them. Their reply was that they could not work in an office unless the equipment was up to the standard to which they were accustomed. The clinic was not started and the health officer was at a loss to understand the situation because he had equipped another clinic a few months earlier for $450. A young dentist was rendering a satisfactory service there part-time at a moderate salary and at least some of the children were being cared for with mutual satisfaction.

I believe that a durable, comfortable, form-fitting pressed steel chair with a few attachments, such as a head rest, arms, and cuspidor, a pressed steel case for instruments, and a portable electrically driven dental engine could be produced in quantity lots for $100 a set, allowing a generous margin for profit to the manufacturer and I believe that within a decade 100,000 of such outfits could be placed in cubicles in health centers or in school buildings to facilitate rendering the service the children require. The nurse and physician could find good use for this equipment, too.

All over the country health departments and schools are confronted with the problem of providing some type of dental care for underprivileged children. This, at present, is not accepted as a responsibility by governmental units, because it is looked upon as a phase of medical care; yet in thousands of communities all over the land dental service is being rendered through these channels where the official group is aided financially and socially by such volunteer organizations as Parent-Teachers Associations, Service Clubs, etc. One of the difficulties confronting these groups is the high cost of dental equipment. If the dental manufacturers are not interested in this problem, undoubtedly others will be in the near future.

The last phase of this question on the possibilities and means of improving the dental conditions of children in this country, and which I shall present from the educator's point of view, is the

problem of service. You all know the need for it and realize the inadequacy of what is offered at present, especially in so far as the underprivileged child is concerned.

When in Edinburgh 12 years ago I visited the Queen's Nurses Home, a headquarters office from which a group of noble women are sent to care for the needy in all sections of that city. There, I learned that these nurses were trained during a 2 year course of study to attend the expectant mother during confinement, as well as to give prenatal and postnatal care. By such a procedure the practice of midwifery was gradually being undertaken by qualified, well trained nurses who cared for the poor.

In Maryland in 1937, I learned from Dr. J. Mason Knox that a similar plan had been in effect there for several years, under the jurisdiction of the Division of Maternal and Child Hygiene of the State Department of Health. If the physicians in the locality where a pregnant woman resided declared to the Health Department that they would not confine the patient, then the patient had the choice of a midwife, who must be paid by her, or a public health nurse, whose salary was paid by the state. If the midwife was called, the nurse made it her business to be present to see that the midwife complied with the state regulations governing the procedure at delivery. I believe that you will all agree with me that such an operation is far more serious for the patient than cleaning teeth, filling small cavities, and extracting temporary teeth.

Does it not seem possible to you that we should be able to train persons to do these simple operations for children in 2 years time? One phase of this service is now being rendered by dental hygienists with only 1 year of training in some states and the results have been good.

If such operators were given 2 years' dental training based on 2 years of pre-dental study, licensed to perform a limited service, and were placed under the supervision of licensed dentists who would counsel and direct them as physicians now counsel public health nurses, would it not be a desirable way of attacking this stupendous problem of dental care for deserving children? Provision could be made in our educational institutions, if they are willing to accept the responsibility, to continue the education of such workers, should they desire it, to the point where they might be awarded dental degrees.

The dental profession probably will not accept this program. Many schools will not endorse it. But in my judgment it is a very logical and economic way of solving the problem of dental care for the underprivileged children in our land. Thousands of young men and women could find employment under such a plan, rendering a needed service to worthy children, earning a compensation equal to that paid to others of like qualifications and skill. And, in due time, the children for whom they care will enter the self-sustaining group in a much healthier state than is the case at present. They will be more appreciative of and presumably better able to pay for their needs, including medical and dental care in later life.

The problem with which we are really concerned is the prevention of dental disease and dento-facial deformities. Health education, adequate nutrition, personal hygiene, eradication of infection, correction of endocrine dysfunction, correction of inherited defects—all contribute to the desired end. Of these I believe that nutrition, personal hygiene, and health education are the most important, for no program in preventive dentistry thus far inaugurated has been successful without these. We cannot, however, rely on any one or all of these to the exclusion of indi-

vidual dental care. This must be recognized as perhaps the major factor for some time to come. Dental attention must be given to the mother during the prenatal period and during the infancy of the child, and to the child itself from 2 to 21 years if we expect to attain our goal.

Why, in the United States where dentistry is universally conceded to be the best in the world, is there no lessening of the prevalence of dental decay, especially among children?

REFERENCE

1. Excerpts from Economic Committee's Report. *J.A.D.A.*, 25:1705 (Oct.), 1938.

Medical Students

". . . They naturally have faith in their instructors, turning to them for truth, and taking what they may choose to give them; babes in knowledge, not yet able to tell the breast from the bottle, pumping away for the milk of truth at all that offers, were it nothing better than a Professor's shrivelled forefinger."—Oliver Wendell Holmes, *Medical Essays,* 1855.