Dentistry in Japan Should Become a Specialty of Medicine with Dentists Educated as Oral Physicians


Abstract: In Japan, the population of elderly individuals (those sixty-five years of age and older) will increase to over 30 percent of the total population by 2030. The elderly commonly have chronic diseases that result in individuals being biologically and pharmacologically compromised. Dentists must have a reliable knowledge of basic clinical medicine for these individuals to be safely and effectively treated. The isolation of dental education from medical education may have been advantageous in the past for the development of dentistry as a profession; however, changes in people’s life expectancy and lifestyles, as well as rapid advances in the biomedical sciences, require dentists to have a thorough foundation in biomedical science and clinical medicine not dissimilar from a physician in any other field of medicine. A reformation of dental education is necessary if optimum oral health care is to be provided for patients in the future. It is thus advocated that dentistry should become one specialty of medicine known as oral medicine, and we propose that the education of dentists should be modified to produce oral physicians.

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In 1995, Nash called for the integration of dental education with medical education and the development of an oral physician to meet the needs of the changing environment of dental practice in the twenty-first century. That same year the Institute of Medicine (IOM) published its report entitled Dental Education at the Crossroads: Challenges and Change. The IOM called for “closer integration” of dentistry with medicine, with the “most far-reaching” possibility being dentistry becoming integrated with medicine as a specialty of medicine. In 1999, Nash challenged dental education’s lack of responsiveness to the IOM report, again calling for reform in dental education with such reform focusing on dentistry’s relationship to medicine. Cohen also advocated transitioning dental education to a medical model, arguing that advances in biomedical science and the changing demographics in the American population required such a change. He noted that the population of those sixty-five and older in the United States will increase to 23 percent by 2030 and 25 percent by 2050. The population demographics of elderly individuals in Japan are comparable. The National Institute of Population and Social Security Research predicts the population of the elderly in Japan will increase to over 30 percent of the total population by 2030. The elderly commonly have chronic debilitating diseases such as diabetes mellitus, hypertension, coronary heart diseases, and vascular disease, as well as changes in cognitive functioning. Many of these problems result in dental patients who are biologically or pharmacologically compromised. Consequently, oral health care for the elderly, as well as for other individuals medically and/or pharmacologically compromised or with special needs, will require that dentists in the future have an understanding of the biomedical sciences and the core of clinical medicine of a typical medical student/future physician.

The purpose of this article is to advance the idea that the time has come for dental education in Japan to structurally merge with medical education, for dentistry to become a specialty of medicine, known
as oral medicine, and for dentists to be educated as oral physicians. We believe an oral physician is the type of health professional most appropriate to meet the oral health needs of the Japanese population in the future.

**History of Dental Education in Japan**

Japanese dentistry began in the eighth century as a part of medicine. However, from the medieval to the modern age, dentistry (dental art) and oral medicine became independent professions. After the Meiji Restoration in 1870, the Japanese government established medical schools for the education of physicians. Dentists were independently educated in private vocational schools beginning in 1890, which continued until the 1940s. A department of dental surgery was established in the medical school of Tokyo Imperial University in 1903 to educate oral physicians. However, the number of students of medicine who specialized in oral medicine, compared to the number of graduates from the vocational schools in dentistry, demonstrated that the medical approach was not preferred as a way to prepare individuals for the practice of dentistry. The first national (vocational) dental school was established in 1928 by individuals who were opposed to oral medicine. The graduates of this school received no academic degree.

Subsequent to the introduction of the American dental educational system in Japan following World War II, Japanese vocational programs in dentistry became dental schools, and all dentists have since been educated in these schools.

**Environmental Changes**

Knowledge in the basic biomedical sciences expanded dramatically during the second half of the twentieth century. These advances led to significant improvements in health and longevity. Rapid progress in genetics and molecular biology, associated with developments in computer science and bioinformatics, has led to new ways of understanding health care, with applicability to oral health care. Application of the advances in biomedical sciences to general medicine has occurred more rapidly and broadly than to the field of dentistry. For example, recent progress in immunology and molecular biology has driven the development of regenerative therapies in medicine and evidence-based medicine. However, the IOM report concluded that dentistry has not been keeping up with the other health professions in the exploration of new therapeutic strategies or the biological basis of dental disease. Incorporating the advances in biomedical science and general medical therapeutics into dental education is essential. Iacopino argued that it is critical for the future of dental education, and dentistry as a profession, to ensure dental students understand molecular and tissue engineering and bioinformatics.

Unfortunately, many dentists in Japan treat the problems of the teeth and surrounding tissues as though they were isolated and disconnected from the remainder of the body’s tissue and organ systems. However, recent studies have clearly established a relationship between oral diseases and general health. A shift in the paradigm from the mechanical treatment of teeth—dentistry—to the treatment of the oral health of patients—oral medicine—is unmistakable and can no longer be ignored.

In Japan, improvements in the social environment, as well as an increase in longevity, have led to changes in the profile of patients’ needs, which now are more focused on implants and esthetic dentistry for the aging population. This shift requires dentists to have a thorough understanding of basic clinical medicine. For most of the twentieth century, when dentists tended to care for relatively young, healthy patients, the isolation of dental education from medical education was not necessarily disadvantageous. However, changes in the profiles of oral and systemic diseases now make it necessary to educate oral physicians—that is, dentists with an understanding of human pathophysiology and the basics of clinical medicine such that they are able to safely and effectively care for their patients. It is our perception that, increasingly, Japanese dental educators are becoming committed to a curriculum in which future dentists have a thorough education in the basic biomedical sciences and the core of clinical medicine—knowledge and competencies comparable to that of a student graduating from a school of medicine.

The isolation of dental education and research from medical education and research has resulted in a lack of understanding of oral health and its importance in the general medical community. Reform of dental education by integration with medical education will also help address this problem.
From Dentistry to Oral Medicine as a Specialty of Medicine

While the historical separation of dental education and the practice of dentistry in the community from medical education and the overall system of health care may have some advantages for nurturing dentists and defining the profession of dentistry as a distinct entity, it has resulted in weakening the curriculum in pathophysiology and an understanding of clinical medicine. Scott reported there are two types of dental education in Europe: stomatology and odontology. The stomatology model, which has most commonly existed in southern, central, and eastern Europe, is characterized by individuals earning a degree in medicine in a medical faculty/school prior to studying dentistry—that is, dentistry being structured as a specialty of medicine. Odontology, on the other hand, is characterized by the study of dentistry in a dental faculty/school without the prior earning of a general medical credential. The perceived weakness of stomatological education is less training in the clinical skills of dentistry. The weakness of the odontological model is perceived to be less education in the basic biomedical sciences and in general clinical medicine. The philosophy of dental education for members of the European Union (EU) is primarily odontological; however, EU dental schools also realize the importance of medical education in order to obtain an adequate understanding of human pathophysiology. Scott concluded that close dialogue between the two educational approaches is required, and quality accreditation systems, postgraduate vocational training (e.g., dental internships), and continuing education for practitioners are needed to create a new educational standard for dentists.

The amount of time devoted to clinical dental topics in a stomatology curriculum is considered to be one of the disadvantages for the qualification of stomatology students as dentists, and this is one of the challenges to be addressed in designing an oral medicine curriculum. Shanley documented that there is a significant difference in the curriculum hours of major dental subjects among schools in Europe. However, physicians in various other specialties of medicine, such as otolaryngologists, ophthalmologists, pediatricians, surgeons, and cardiologists, all participate in a general curriculum in clinical medicine during medical school that covers all facets of human health and disease processes and provides students with fundamental skills in patient assessment. Focused clinical training in their specialty occurs in residency programs after completion of a general medical education. This model suggests that education for dentistry requires focused clinical training in a postgraduate residency, subsequent to a core curriculum in general medicine in which students acquire foundation knowledge and skills.

A further problem attributed to education for the practice of dentistry when integrated with medicine is the so-called “identity crisis for the dental students” described by Fiehn in Nordic countries. He stated that, in countries where dental students and medical students are educated together for the first two of a five-year undergraduate course in odontology, some dental students drop out of dental school and transfer to medical school, thus reducing the number of dentists entering the profession. However, this is a result of the appeal of the respective professions and does not support maintaining the isolation of dental education from medical education. In their study of North American dental students, Henzi et al. found that a combined medical and dental curriculum was positively perceived by senior dental students and dental residents, although sophomore dental students had negative impressions of the curriculum.

Landesman and Meskin and Graham believe that some integration of dental and medical education occurs in various dental schools in the United States and that dental education independent from medical education presents no disadvantage to collaboration with medical educators and researchers. Graham noted in his commentary that “we are proud of our independence, and we are proud to bear the title of being a dentist.” He considers dentists to be well trained in either the present or improved programs of odontology-based education and sees no necessity for instituting fundamental changes in dental education based on the stomatology approach.

Giddon urged that U.S. dentists be “called oral physicians,” by virtue of their four-year dental education. On the other hand, Nash, an advocate of the medical model of oral physicians, argued against replacing “dentist” with “oral physician” if dentists do not participate in the core of the general medical curriculum and earn the M.D. degree traditionally associated with an individual designated as a physician. Nash concluded that the current autonomous status of dental education from medical education...
is insufficient for the education of an oral physician. He also stated that modern dental education began in the nineteenth century as an independent professional program distinct from medicine because of the overwhelming prevalence and severity of dental disease, which up to that time had been solely managed by mechanical treatments; he said it also evolved autonomously due to the lack of knowledge regarding the relationship between oral diseases and both general health and systemic diseases.

The relationship between education for dental practice and education for other aspects of medical practice is a critical issue facing dental educators. It is our experience that many dental educators do not agree with the Institute of Medicine’s recommendation that dental education must reject the status quo curriculum and move to “closer integration” with medicine and medical education. At a minimum, the IOM recommended that dental students receive the same instruction in the basic biomedical sciences as medical students and that dental students experience at least one clinical clerkship in internal medicine.  

### Transitioning Dental Education in Japan to Medical Schools to Educate Oral Physicians

In Japan, dental education is based on the odontological model, in which dental education is autonomous and separate from medical education. The dental curriculum is six years in length. This is the same length of study for general education in medicine. Prior to 1993, the first two of the six years of the curriculum in all Japan’s dental schools were devoted to study in the liberal arts and sciences, similar to the predental curriculum in the United States. The last four years consisted of the basic biomedical sciences and clinical dental sciences, with one year of clinical training. Biomedical subjects taught in dental schools are designated with the prefix of either “dental” or “oral,” such as oral anatomy, oral physiology, dental pharmacology, etc., even though they cover not only the mouth and teeth but the entire body. In 1993, the Ministry of Education, Culture, Sports, Science, and Technology in Japan changed the requirements for dental schools, granting dental schools increased flexibility for curriculum innovation. At present, predental education in the liberal arts and sciences has been restructured, and a combined curriculum of liberal arts and biomedical sciences is being employed in most dental schools.

In 2003, the Act of the Foundation of National University was established, and some graduate schools of dental sciences merged with those of the medical and/or pharmaceutical sciences. However, in undergraduate dental education, all dental schools remain separated from medical schools. The university hospitals used for medical school education were merged into medico-dental hospitals at leading universities, but dental schools continue to be administered independently from medical schools.

Although basic oral surgery (exodontia) has traditionally been understood as a function of general dentistry, it has also developed in Japan as a specialty distinct from the simple extraction of teeth. As a specialty, oral surgery is considered a part of general surgery in medicine. Many medical schools in Japan have departments of oral surgery, but with small-scaled departments of dentistry. In the United States, several oral and maxillofacial surgery programs offer an M.D. degree as a component of advanced education for the specialty practice of oral surgery. In Japan, dental care such as the extraction of teeth, the restoration of teeth, and the fabrication of removable or fixed replacement teeth is considered to be a technical skill, the study of which does not belong in a medical school.

There has recently been an attempt by Japanese dental schools to integrate more clinical medicine in dental curricula. However, these efforts do not provide sufficient education in medicine to enable dentists in Japan to consider themselves oral physicians. The total number of lecture hours on medical subjects in dental schools in Japan is still very limited. Additionally, education in medical schools regarding oral health and its importance to overall health and well-being is poor in Japan, resulting in lack of understanding of oral health among physicians.

As Nash noted, there were several reasons for the separate education of dentistry and medicine in the late nineteenth and early twentieth centuries. However, changes in environmental circumstances, disease profiles, and progress in the life sciences now require implementation of a new paradigm for dental education. In the twenty-first century, the training of oral physicians with a basic medical education is the most appropriate way to develop future dentists. It is now important for dental schools to merge with the medical schools in Japan.
The framework of dental education in Japan is essentially the same in all schools, due to the strict official requirements for the establishment of colleges by the Ministry of Education, Culture, Sports, Science, and Technology. Japanese health professions schools are classified into three categories depending on the administrative structure: having both dental and medical schools; having a medical school but not a dental school; and having a dental school but not a medical school. In the first two cases, dental schools could merge with the medical school, organizationally aligning dentistry as a subspecialty of medicine, or a department of oral medicine could be established as a distinct academic department. Where there is a dental school but no medical school, merger with another medical school would be necessary. In Japan, the establishment of any new dental or medical school is strictly prohibited by government policy. Therefore, amendment of related laws and acts of education is essential in order to reform the dental education system (see Figure 1).

Departments in dental schools that have corresponding academic units in medicine, such as the basic biomedical sciences, could merge with these departments in medical schools. Clinical departments in a dental school, such as oral surgery, maxillofacial surgery, oral implantology, periodontology, endodontology, conservative dentistry, pediatric dentistry, orthodontics, and prosthodontics, could become divisions, such as exist in large medical school departments, of an oral medicine department in medical school (see Figure 2).

**Conclusion**

Historically, oral medicine and other specialties in medicine were taught in a medical school...
in Japan. Since the close relationship between oral health and general health were not well established in the past, efforts were made to educate dentists as the specialists in autonomous dental programs. However, changes in the last century in the biomedical sciences, disease profiles, and demographics require recognition that oral and general health care are inseparable, and dental students must learn the same biomedical sciences and the core of clinical medicine required for students studying to enter other fields of medical practice. It is time for dental educators to develop strategies to integrate dental education with medical education. From our perspective, this is the most reasonable approach for educating oral physicians for the future of oral health care. Today’s dentistry should be tomorrow’s oral medicine, a distinct specialty of medicine. From our perspective, this is the most reasonable approach for educating oral physicians for the future of oral health care. Today’s dentistry should be tomorrow’s oral medicine, a distinct specialty of medicine.\textsuperscript{4,15} The integration of dentistry and medicine in Japan will require changing related laws and regulations of the higher education system and welfare and social system, such as the Fundamental Law of Education, the Medical Acts, and the Dental Acts. The mutual understanding and close collaborations of medical and dental professionals and educators will be of critical importance to the successful establishment of such an integrated program of study.

REFERENCES