

Letter to the Editor

Inaugural Editorial

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I would like to thank the JSM Dentistry for giving me the opportunity to write the inaugural editorial for the journal. Today, the science of dentistry is going through a dramatic transition. The handcrafting component of the profession, which has dominated dentistry, is now going through a monumental transition. Increased use of computer sciences, additive technologies, tissue engineering, nanotechnology, improved understanding of the genome and its impact on biology (including microbiology), and the use of more efficient tools to accumulate and process clinical data will change dentistry for ever.

To better understand the impact of these sciences, it is important to realize how dentistry has evolved during the past 150 years. The demand for dental care increased dramatically during the late 19th century because of the industrial revolution and its impact on society. Individuals born in rural regions moved to cities where they changed their food habits toward more sugar rich food. They also came into contact with other individuals from other places with different microbiological floras. These changes - increased carbohydrate consumption and transfer of microorganisms - resulted in an almost endemic development of caries.

Before 1872, cavity preparations were mainly done with hand instruments such as chisels and excavators, and the most commonly used restorative materials at that time were foils, cements and amalgams. The invention of the foot-driven drill in 1872 revolutionized dentistry. The drill made it possible to cut hard tooth tissues. As we move into the 20th century, different cavity design principles had evolved and became standards for proper treatments. During the 100 years following the introduction of the foot-driven drill, the demand for dental care increased as carious lesions became more common. Newer technologies, including faster drills, use of ceramic crowns, cast gold restorations and polymers, were introduced. These developments drove the profession toward a highly technique oriented profession where craftsmanship of making restorations, rather than the ability to prevent dental disease, became the gold standard in dental education and state boards.

Water fluoridation and fluoride rich toothpastes, though, resulted in a dramatic decrease in the development of dental caries. During the 1970s it was clear that caries activity had declined significantly in many Western countries. That decrease was so dramatic, and during the 1980s the "golden age" of restorative dentistry seemed to be over. The number of students applying for dental schools declined significantly during that decennium, and many dental schools were forced to close.

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Simultaneously with these developments in dentistry, though, other changes occurred in society that soon would start affecting dentistry. The monetary inflation occurring during the late 1970th resulted in an increased cost of different raw materials. One of the metals that increased in value faster than any other metal was silver, a main component in dental amalgam. Gold also grow fast in value. The increased value of these metals forced the dental industry to consider cheaper alternative materials. Such materials included different polymers and silicates. Because polymer-silica based composites and ceramic restorations already were available, the main challenge was to refine the existing products and market them as good metallic alternatives. These new materials were more aesthetic appealing and were perceived as being more biocompatible.

During the mid 1980s, the trend was clear. Patients wanted to have their metallic restorations replaced with the more aesthetic looking composites and ceramics. In addition, different debates occurred in media questioning the safeness of metallic materials, particularly of dental amalgams. Thus, as we move through the 1980s, there is a significant shift in treatments, and well functioning metallic restorations start to be replaced because of aesthetic reasons and perceived health concerns. As a result, during the 1990s, dentistry regains its position as an attractive profession, and during the past 20 years, new dental schools have emerged.

Even though the move from metallic restorations to alternative materials had a great impact on dentistry during the late 20th century, more important was the digital transformation that occurred during the same time. During the 1970s, computers made their entrance into dentistry. Since then, different CAD-CAM technologies, digital recordings (x-rays, scanners, etc.), and new orthodontic treatments (type Invisaline) emerged. Newer advancements in microbiology using different DNA technologies evolved during the same time. All these developments have impacted dentistry and will continue to impact the discipline even more in the future. An emerging field, not yet extensively used in dentistry, is the use of different computer simulation programs capable of predicting future treatment outcomes. These simulations will become more and more reliable over time as information gathered from different clinical and laboratory studies are collected in huge databases and processed. All these developments will happen in attempts to improve the oral health of the world population.

Up until recently, dentists felt comfortable with the education they received in dental schools, particularly if it was supplemented by a few continuous educational courses each year. The digital revolution has changed that scenario. New information now flows faster than ever before, and in order to remain informed, the practicing dentist must have easy access to new information in the field. JSM Dentistry can play a major role in that process. To succeed, JSM Dentistry should focus on quality

articles representing different fields, both basic as well as clinical sciences. By publishing a significant amount of good review articles, dental students and practicing dentists all over the world will be able to keep up with new information. With such review articles, mixed with good hypothesis driven research articles, the JSM Dentistry has the potential of becoming a high-impact open access journal.

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