Unconventional Dentistry: Part I. Introduction

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Abstract
This is the first in a series of five articles providing a contemporary overview and introduction to unconventional (alternative) dentistry (UD) and correlation with unconventional (alternative) medicine (UM). UD is analogous to and conceptually inseparable from UM. Dentists should learn about UD and UM and be aware of evidence on the safety and effectiveness of treatments and procedures. While being skeptical of promotions, dentists should be able to accept and encompass science-based advances and reject unproven and disproven methods. Incorporating selected unconventional methods with conventional dentistry in selected patients for specific purposes may be useful to both patients and dentists. Improved education in critical thinking, research, science, medicine, behaviour, communication and patient management is needed.

MeSH Key Words: alternative medicine; dentistry; science
medical and dental treatments have not been rigorously tested, but sees this as a failing in need of remedy. Conversely, many promoters of UM and UD believe that scientific testing does not apply to their methods; they rely instead on theories and anecdotes. Because many chronic disorders are not adequately managed by science-based methods, unconventional practitioners argue that a different (“alternative”) approach is needed. For example, some dental organizations advocate the use of “biocompatible” dental materials and dental treatment methods to enhance systemic health and wellness, yet scientific evidence of such enhancement is lacking. Professional debates reflect the depth of emotion and confusion surrounding the issue of UD.

Some unconventional practices have been studied and proven to be useful for some conditions; once science-based, these practices move into the realm of the conventional. Most unconventional treatments have not been studied scientifically or to adequate scientific standards; instead, they exist in a grey zone of beliefs, influenced by many factors.

**Science and Scientific Research**

Science is more than a body of knowledge — it is a way of thinking. The scientific method is not easily defined and
consists of no rigid rules. Objectivity coexists with creativity, critical thinking and scepticism. A scientific protocol generally starts with a question asked; information is organized, a working hypothesis answering the question is formulated, observations testing the hypothesis are made, results are tested to confirm or modify the hypothesis, and the results are published; scientific consensus is reached when these results are repeatedly replicated by others. Scepticism questions the validity of a particular claim and calls for evidence to prove or disprove it.

Dental and medical science recognizes the need for well-designed research.11 The prospective, double-blind, randomized, placebo-controlled study is the gold standard in clinical therapy and prevention research, and also allows observations about causation. Cohort studies best address questions about diagnosis, and questions about prognosis and harm are addressed by case-control studies or cohort studies. Methodology and design supercede an author's fame or academic status as the best quality of evidence. The pitfalls of relying too heavily on expert personal opinion are recognized.12 Publication in a peer-reviewed journal is important, but may not assure the quality of evidence applied to the reader's question. In general, the hierarchy of quality of evidence, in descending order, is as follows: systematic reviews of well-designed studies, results of one or more well-designed studies, results of large case series, expert opinion and personal experience.13

Because science requires debate and testing under properly controlled conditions, some observations may be contradictory and controversial. Intuitive thought is not necessarily correct, nor is it scientifically valid. Health, medicine and dentistry are inherently complex, and simple answers are often wishful thinking.

Pseudoscience and Junk Science

Pseudoscience refers to claims that appear to be scientific but lack supporting evidence and plausibility.14 Problems in critical thinking and logic may result in erroneous attributions of relationship between a premise or statement of evidence and a conclusion.15 “Junk science” is a contemptuous label used by trial lawyers to refer to elaborate, systematized, jargon-filled deceptions that take the form of science but have no substance.16 For example, “by harboring bacteria which continuously release toxins into the body, root canal teeth weaken the immune system and are contributing to a number of degenerative diseases... that range from head and neck pain all the way through to rheumatism and cancer.”17 This serious-sounding claim has no scientific basis.

Often the media are more interested in highlighting disagreement and controversy than in establishing the extent of consensus, and this tension can lead to confusion and distrust. The best hopes for constructive media information lie in responsible journalism and clear communication from scientists.19

The public is constantly bombarded with media reports of scientific breakthroughs; in fact, these “breakthroughs” are almost always minor steps in basic or clinical research that do not translate to useful clinical advice. In addition, advertisements for unconventional products are carefully worded to appeal to the public, who may be unable to discern substance from marketing.

One of the most fertile grounds for promoting unconventional practices is the Internet. Both the advantage of and the main problem with the Internet is the abundance of information. Unfortunately, there are no safeguards to ensure the quality of that information. The Internet appears to be the most pervasive source of pseudoscientific misinformation available, while also being an increasingly valuable source for scientific information. There are many reliable, scientific dental Internet resources. One of the most important sites combating quackery in dentistry and medicine is Quack Watch.20

Unconventional Dental Practices

Unconventional dental practices can be categorized into major areas corresponding to the National Center for Complementary and Alternative Medicine (NCCAM) Classification of Complementary and Alternative Medicine (Table 1). Such practices represent “alternative” medical practices extended to oral-dental conditions, dental services provided for non-dental conditions or inventions unique to dentistry. Future articles will deal more specifically with some of these practices and many associated issues.

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