

How a Modified Approach to Dental Coding Can Benefit Personal and Professional Development With Improved Clinical Outcomes

Raymond Lam, Estie Kruger, and Marc Tennant

The International Research Collaborative-Oral Health and Equity, The University of Western Australia, 35 Stirling Highway, Crawley, WA 6009, Australia

Abstract

Background: One disadvantage of the remarkable achievements in dentistry is that treatment options have never been more varied or confusing. This has made the concept of Evidenced Based Dentistry more applicable to modern dental practice. Despite merit in the concept whereby clinical decisions are guided by scientific evidence, there are problems with establishing a scientific base. This is no more challenging than in modern dentistry where the gap between rapidly developing products/procedures and its evidence base are widening. Furthermore, the burden of oral disease continues to remain high at the population level. These problems have prompted new approaches to enhancing research.

Aim: The aim of this paper is to outline how a modified approach to dental coding may benefit clinical and population level research.

Methods and Materials: Using publically assessable data obtained from the Australian Chronic Disease Dental Scheme and item codes contained within the Australian Schedule of Dental Services and Glossary, a suggested approach to dental informatics is illustrated.

Results: A selection of item codes have been selected and expanded with the addition of suffixes. These suffixes provided circumstantial information that will assist in assessing clinical outcomes such as success rates and prognosis.

Conclusion: The use of item codes in administering the CDDS yielded a large database of item codes. These codes are amenable to dental informatics which has been shown to enhance research at both the clinical and population level. This is a cost effective method to supplement existing research methods.

Keywords: informatics, coding, evidenced based dentistry.

BACKGROUND

It can be argued that the purpose of dental research is to better understand the disease process so that improved clinical outcomes can be achieved. Toward this objective,

Corresponding author. Tel.: +61 409105235; E-mail: rbraymondlam@gmail.com.

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modern dentistry has undergone a paradigm shift with the advent of new materials, techniques and protocols. As an example, there are hundreds of different implant systems, eight generations of bonding systems and a rapidly expanding array of restorative materials on the market. Whilst this is a testament to the remarkable achievements of modern science, this presents additional challenges. With so many materials and techniques, treatment options have never been as varied or confusing. This is difficult in an increasing litigious society where patients have never been more informed. To assist the

decision making process, dentists have traditionally relied on surrogate markers in the literature. Basing their decisions on key measurements performed by third parties such as success rates and prognosis, a treatment plan is presented by the clinician. Whilst treatment plans may vary, there is an underlying principle that decisions subscribe to evidenced based dentistry (EBD). This concept is endorsed by professional associations throughout the world and relates to making clinical decisions based on best available evidence.^{1,2}

Although these principles embodied by EBD are universally accepted, in reality, the gap between research and clinical practice may be significant. A problem with EBD is that it is unidirectional, as there is often little actual clinical feedback to its evidence base. High quality studies rely on a large number of comparable studies which in turn depend on favorable response rates. Unfortunately, many aspects of dentistry are not amenable to randomized control trials and meta-analyses are often lacking in acceptable studies. Regrettably, general practice clinicians are often too busy in private practice with research constituting little of their professional time. This translates to minimal feedback by the practitioners who are ultimate drivers for implementing research. A further difficulty is that dental procedures are technique sensitive with outcomes affected by clinician skill and opinion, time, materials and patient cooperation. It is therefore unsurprising that there is variability in success rates (longevity and function) between clinicians.³ These circumstances are difficult to normalize for research purposes and its relevance to each clinician is questionable. Furthermore, the academic research setting may be less subjected to pressures associated with private practice with procedures conducted by experienced or specialist clinicians without material, financial or time constraints. Establishing a body of EDB may not be straightforward and is fraught with many logistical and practical complications.

These dentist level concerns can also be extrapolated to the profession level. Despite the remarkable achievements afforded by clinical dentistry, the burden of oral disease remains high. In a country such as Australia which has one of the most desirable standards of living and life expectancies, oral disease remains the most prevalent disease.⁴ The economic burden of oral disease is significant and has been estimated to be second only to cardiovascular disease.⁵ Access seems to be an issue with one third of the population unable to visit a dentist solely due to cost.⁶ It seems that oral health policy has not made the advances seen in clinical dentistry. A statement made by the Australian National Advisory Council on oral health with sentiments shared worldwide indicated that *“public health does not receive sufficient emphasis... there is a need for sustained data collection activity as there are gaps in population level data that needs identification.”*⁷ Although

dentistry has made considerable progress, there is a need to improve EBD.

As such, it may be worthwhile to consider alternative research methods to supplement traditional approaches. One emerging area is the field of dental informatics. This study presents an unconventional use of the definition to show how it can benefit personal and professional development. Using examples of dental coding according to the Australian system and a recent oral health scheme known as the Chronic Disease Dental Scheme (CDDS), this study aims to present an alternative research method. This is coincident with the World Health Organization (WHO) vision in supporting the development of numerical based codes for use in oral care provision.⁸ This method is applicable to all dentists and has jurisdictional, national and global benefits.

Dental informatics

Dental informatics refers to the application of computer and information science to improve dental practice, research, education and management.⁹ Its main goals are to improve patient outcomes and to make the delivery of dental care more efficient.⁹ Stated differently, this study defines these objectives as improving personal (clinical level EBD) and professional (the dental body) research with the aim of achieving better clinical outcomes.

Dental informatics is an emerging field that has yet to be accepted into mainstream dentistry. However, the advent of this technology has created many opportunities to improve existing practices. Most of the developments have so far focused on specific applications such as diagnostic devices for oral pathology, milling prosthetic restorations, education and digital practice administration. Another area that has been reported in the literature is dental coding. It is in the sub-area that the authors believe have enormous potential for the profession.

In most parts of the world, dental services are administered by item codes. These codes are rendered as part of treatment planning and administration. Often given as quotes and recorded alongside clinical notes and billing, these codes describe an act of dentistry. A typical dental visit consists of a series of codes to describe the services provided at that visit. A collection of these codes are often referred to as schedules, such as the Australian Schedule of Services and Glossary.¹⁰ Similar to many countries, the Australian schedule is encyclopedic, encompassing and specific. Its depth is sufficient to describe almost any clinical dental procedure. The potential in this application is that codes enable description of services that would otherwise be written in English. In this codex form it is amenable to research and is an invaluable adjunct to traditional methods of data collection without such limitations. This has been recognized in the literature with

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