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Tooth Numbering System in Saudi Arabia: Survey



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KEYWORDS

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Abstract Objective: There were four aims of the current study: (1) to find the most commonly used Tooth Numbering System (TNS) in Saudi Arabia in both academic and non-academic institutions, (2) to identify the most commonly taught TNS in dental colleges, (3) to understand the reasons why dental practitioners prefer to use a specific TNS, and (4) the consequences of using more than one TNS.

Materials and method: Between May 2014 and May 2015, a self-administered questionnaire containing 21 questions was randomly distributed to 121 individuals (20 deans of dental colleges and 101 heads of governmental dental centers).

Results: The most commonly used TNS is the Fédération Dentaire Internationale (FDI) TNS for both primary and permanent dentitions in both academic and non-academic institutions, followed by the Palmer TNS and then the Universal TNS.

Conclusion: The FDI TNS proved to be the most taught TNS in dental colleges in Saudi Arabia. It is advised that the FDI TNS be implemented as a unified system in Saudi Arabia due to the advantages of this particular TNS and the benefits of using one single TNS.

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1. Introduction

All humans pass through two stages of dentitions. The primary dentition consists of 20 teeth, while the permanent dentition consists of 32 teeth. The age-related variations in tooth presence and location necessitate a numbering and encoding method for each tooth. The Tooth Numbering System (TNS) uniquely identifies each tooth by number for charting and communication purposes (Schied and Weiss, 2012). Histori-

cally, different methods of designating and encoding teeth have been used (Frykholm and Lysell, 1962; Türp and Alt, 1995; Peck and Peck, 1993; Lyons, 1947). The first known TNS was proposed by the Viennese dentist, Adolf Zsigmondy in 1861 (Zsigmondy, 1874). Zsigmondy developed a numbering sequence from 1 to 8 for permanent dentition, starting from the central incisor (1) until the third molar (8), and roman numerals I to V (later modified, A to E) for primary dentition. To specify the quadrant location, a grid symbol was placed around the number or character (Türp and Alt, 1995; Peck and Peck, 1993).

In 1870, an American dentist, Corydon Palmer (Ohio, USA), who was unaware of Zsigmondy's prior publication, described a similar numbering method (ADA, 1870; Palmer, 1891). English speaking countries therefore, refer to the numbering system as the Palmer system (Türp and Alt, 1995; Peck

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and Peck, 1993). In addition, variations were proposed. For example, Viktor Haderpup (Denmark, 1887) suggested the use of symbols “+” for maxilla and “-” for mandible teeth. The placement of the symbol indicated left (symbol before the number) or right (symbol after the number) side of the mouth (Türp and Alt, 1995; Peck and Peck, 1993).

The Universal Numbering System, proposed by German dentist Julius Parreidt in 1882 (Peck and Peck, 1993), uses consecutive integers, beginning with the upper right third molar (designated as #1), and counts clockwise around the dentition, finishing with the lower right third molar (designated as #32).

The 2-digit system, originally described by Dr. Jochen Viohl of Berlin in 1966, identifies each tooth with two digits (Peck and Peck, 1993). The first digit indicates the quadrant and the second digit refers to the tooth. At the 5th annual meeting of the Fédération Dentaire Internationale (FDI) in 1970 it was proposed that the 2-digit system be used worldwide (Keiser-Nielsen, 1971). Due to its accuracy, safety, expandability and applicability to modern technology, the FDI believed that the 2-digit system met all the requirements for the ideal TNS. The system is now called the FDI TNS (Keiser-Nielsen, 1971).

The FDI committee described the ideal TNS as a system that is simple to understand and to teach, easy to pronounce in conversation and dictation, readily communicable in print, easy to translate into computer output and is easily adapted to standard charts used in general practice (Peck and Peck, 1993). Prior numbering systems did not adequately meet these requirements. For example, the Zsigmondy/Palmer system is not easily pronounced and does not easily translate into computer input (Peck and Peck, 1993; Keiser-Nielsen, 1971; Elderton, 1989; O'Connor, 1983). The Universal system is difficult to remember and is not easily communicated worldwide (Peck and Peck, 1993; Keiser-Nielsen, 1971; Elderton, 1989; O'Connor, 1983; Thurow, 1986).

A study by Sharma and Wadhwa in 1977, that surveyed 157 fourth-year students at an American dental school, found that 74% of students preferred the FDI TNS, compared to 16% who preferred the Universal TNS (Sharma and Wadhwa, 1977). The deans of 14 dental schools in the UK were asked which TNS they used in teaching and in clinical practice. Thirteen deans responded. For teaching purposes, two reported using all three TNS, three used the FDI and Palmer, one school used the Palmer and Universal, six schools used only the Palmer, and one school used only the FDI TNS. For clinical practice, 12 deans reported using only the Palmer and one reported using the FDI TNS (Blinkhorn et al., 1998). As of 1989, the FDI TNS had been officially adopted by various institutions, including the International Standards Organization (ISO/TC 106), British Standards Institutions, World Health Organization, Interpol, and the International Association for Dental Research (Elderton, 1989). However, according to Peck and Peck in 1996, the Palmer TNS has continued to be the unofficial TNS of choice for many American dentists. These authors encouraged the use of the FDI TNS (Peck and Peck, 1996). The FDI is the TNS recommended by many researchers because of its ease of use in verbal and electronic communications and its worldwide adaptability (Türp and Alt, 1995; Peck and Peck, 1993; Keiser-Nielsen, 1971; Elderton, 1989; O'Connor, 1983; Thurow, 1986; Sharma and Wadhwa, 1977; Peck and Peck,

1996). It is the only system that makes visual sense, cognitive sense, and computer sense (Peck and Peck, 1993).

To our knowledge, there is no standard TNS used at dental colleges and hospitals in Saudi Arabia. The use of a variety of TNS can lead to confusion in teaching in school settings and misunderstandings in consultations and communications in clinical settings. To date no studies have focused on these issues. The purposes of the current study were to (1) explore the geographic distribution of different TNS used in Saudi Arabia in academic and non-academic institutions, (2) identify the most commonly taught TNS in dental colleges, (3) understand the reasons why dental practitioners prefer one TNS over another and (4) explore the effects of a lack of a commonly accepted national TNS.

2. Materials and methods

The current study was registered and approved by the College of Dentistry Research Center at King Saud University (KSU) (registration number FR 0046). A paper and pencil survey was distributed to the following groups:

1. All deans of dental colleges in Saudi Arabia (if the dean was not a dentist then the survey was given to the clinical director).
2. The heads of dental departments in the Ministry of Health Hospitals in Saudi Arabia.
3. The heads of dental departments in the Military, National Guard, Armed Forces Hospitals and other governmental dental service providers.
4. The higher authority officers in the Saudi Arabian field of dentistry.

A total of 123 surveys were distributed, 20 surveys to academic institution and the rest (103) to non-academic dental institutions. The survey questions were written by the author and based on prior literature and unstructured interviews with faculty members experienced in writing dental surveys at the College of Dentistry, KSU.

A primary version of the questionnaire was distributed and discussed with two deans of dental colleges and three heads of dental departments in government hospitals. The final questionnaire was completed based on comments and suggestions. The final questionnaire was pilot tested by distribution to 10 dentists to evaluate validity. Some questions were modified accordingly.

There were two final versions of the questionnaire: one for academic institutions and one for non-academic institutions. The non-academic questionnaire was comprised of 19 questions. The academic questionnaire was comprised of 21 questions (19 were the same as the non-academic questionnaire with the addition of two questions). The questions focused on five areas: (1) information about the institution, (2) the specific TNS used at the institution and the reasons for its use, (3) opinions regarding what TNS should be used; and on the academic institution surveys only: (4) the TNS used in teaching and practiced at the dental college and (5) the suggested TNS to be used for academic teaching.

Lists of targeted participants were made based on information from the Ministry of Higher Education for dental colleges in Saudi Arabia (both governmental and private). For

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