



## **Survey on Tooth Numbering System in Peshawar Khyber Pakhtunkhwa**

**Mashooq Khan<sup>1</sup>, Sana Ali<sup>\*2</sup>, Uroosa Zeb<sup>3</sup>**

<sup>1</sup>Institute of Paramedical Sciences, Khyber Medical University, Peshawar, Pakistan

<sup>2</sup>College of Medical Technology, Medical Teaching Institution, Bacha Khan Medical College, Mardan, Pakistan

<sup>3</sup>College of Medical Technology, Medical Teaching Institution, Bacha Khan Medical College, Mardan, Pakistan

**Corresponding author's Email:** [sanaali.kmu@gmail.com](mailto:sanaali.kmu@gmail.com)

### **ABSTRACT**

*Aim of this study was to find out which tooth numbering system is commonly practice by the dentists in Khyber Pakhtunkhwa. This is a survey based study performed in 4 months time period from September to December. Non probability convenience sampling technique was used. A self-administered questionnaire was randomly distributed to 200 individuals in different government hospitals and private clinics. And they were asked different questions regarding numbering system. Tooth numbering system is different systems use for the identification of teeth in order to communicate with field related persons and with others. There are many numbering systems but the most widely used are Palmer Notation System, Federation Dentaire Internationale, and Universal Numbering System. In our study the most commonly used was Palmer Notation System (85%) for primary and permanent dentitions in government hospitals and private clinics, then the Federation Dentaire Internationale system (10%), and very few (5%) were using Universal Numbering system. The Palmer Notation method is the most commonly practiced tooth numbering system for primary and permanent dentition in both academic and non-academic settings in Peshawar, Khyber Pakhtunkhwa and majority of the participants agreed and advised that the Palmer Notation method should be practiced as the standard tooth numbering system for convenience and benefits of using one Tooth Numbering System.*

**Keywords:** *Tooth numbering system, Palmer notation, Federation Dentaire Internationale, Universal numbering system.*

Received 23.11.2019

Revised 11.12.2019

Accepted 01.01.2020

### **INTRODUCTION**

Human beings have two arches. The maxillary arch and the mandibular arch which are also known as upper and lower arch respectively. They are names so because one is made up of maxilla and the other one made of mandible. Teeth present in the upper arch are named as maxillary teeth and those present in lower arch are called mandibular teeth (9).

All of the scientific fields have some terms, standardized abbreviations and denotations to facilitate communication among individuals of the same discipline as well as with other disciplines. Tooth Numbering Systems are the systems which are important for those who deal with human and animal teeth (10). Dental notation is the term used for the recognition of teeth when we write it (12). In the field of dentistry, numbering systems are set of symbols (1, 7). While describing a tooth it is much easy and simple to give it a number, sign, or symbol for example to describe right upper permanent central incisor number #8 is written in Universal Numbering System. Three most commonly used numbering systems will be described here (1).

All of the humans have two types of dentitions in their whole life. The deciduous dentition comprises of 20 teeth, and the permanent dentition comprise of 32 teeth. The variations associated with age in presence and location of teeth makes it necessary to have a numbering and encrypting method for teeth. Each of teeth is solely identified by number for delineating and discussion processes(1). Poor communication among dentists leads to serious errors and inaccuracy (11, 14).

Historically, lots of methods for the designation and encoding of teeth have been used. A Viennese dentist named Adolf Zsigmondy introduced the very first tooth numbering system by the year of 1861 (2, 8). Zsigmondy developed a numbering pattern for secondary dentition which starts from 1 for central incisors and ends on 8 for third molar, while roman numbers I to V which was then modified, A to E for deciduous dentition. A dentist from Ohio, United States of America named Corydon Palmer, he was not aware of the Zsigmondy's publication, introduced the same numbering system. Viktor Haderpup (Denmark, 1887) modified the system and recommended the use of "+" signs for maxillary teeth and "-" sign for mandibular teeth. The "+,-" signs placed before the number meant left side of the mouth and "+,-" signs after the number meant right side of the mouth (2).

In 1882 a dentist from Germany named Julius Parreidt introduced a new system, the Universal Numbering System. The numbering system which is widely used now a day is the universal system. Assigning "Universal" name to it is not known. The Universal Numbering System is not used universally but used in USA and in some parts of Canada (8). It assigns different numbers (1 to 32) in a successive pattern for all the secondary teeth, and a number/letter (1d to 20d) for all of the primary teeth. The numbering starts from maxillary third molar of the right quadrant assign as 1 and ends on 16 for the maxillary third molar on the left quadrant, the succession drops to the third molar of mandibular left quadrant as 17 and ends on third molar on the mandibular right quadrant as 32. The same sequence is used for primary dentition starting from upper right 2<sup>nd</sup> molar as # 1d and ends on #20d on lower right 2<sup>nd</sup> molar (3).

The Palmer notation also called Zsigmondy system which is used commonly as mathematical and symbolic representation for the identification of an individual tooth utilizes a simple sign or letter, which is different for all of the four quadrants. Additionally, the numbers 1 to 8 are written for the identification of permanent teeth, starts from the central incisors till third molar in a specific quadrant. For primary teeth **A** to **E** letters are written along with quadrant symbol.

In 1966 the two digit system or FDI was proposed by Dr. Jochen Viohl of Berlin. The Federation Dentaire Internationale (FDI), which is an international dental organization, has proposed a new numbering method, with the aim to set out regularization throughout the world. Despite of the fact, presently not used throughout the world, but maybe it is used in the future. It is a simple two digit system, used both for primary and secondary teeth. In the two digits the first one indicates the quadrant number if the tooth is primary or secondary [3]. The two digits in this numbering system should be pronounced separately for example 15 as one five [8]. For permanent 1-4 and for primary 4-8 are specified for quadrant number. The number on the second place denotes the number of specific tooth in that quadrant, completely the same as used in Palmer notation system for secondary teeth [1-8]. The primary teeth in each of the quadrant are number as [1 to 5], the number increases from the midline to posteriorly[3].

## **MATERIAL AND METHODS**

This study was conducted in the Peshawar, Khyber Pakhtunkhwa. This was a survey based study. The study duration was four month period. Sample size was calculated from the population of our study on the WHO sample size calculator. The total number of government employed and registered dentist according to Health Regularity Authority is four hundred fourteen (414) and for determining sample size the confidence level was taken 95% and confidence interval was 5% so after the calculations the sample size taken out was 200 dentists. Non probability convenience sampling technique was used. Government sector dentist and in private sector the registered dentist were included. While unregistered dentist and those dentists who were not interested in our study were excluded. A survey-based query for the Tooth Numbering System which is most commonly used both in the government hospitals and private clinic dentist in Peshawar Khyber Pakhtunkhwa was made. In addition, the reason in support of practicing a specific Tooth Numbering System was investigated. For government sector hospitals and private clinic a questionnaire was designed in which different questions were asked in the survey. We visited different clinical setups and government hospitals for data collection. A pencil and a questionnaire of different questions were distributed and they were asked different questions like which tooth numbering system are you practicing and why do you prefer this system. Benefits of this system and drawbacks of other system were also asked. The final data was run over SPSS and the result was obtained.

## **RESULTS AND DISCUSSION**

A total of 200 dentists were included in current study. All dentists were asked about the tooth numbering system. The most common tooth numbering system were found Palmer Notation Method with 85% (n=175), followed by FDI system with 10% (n=20), and 5% (n=10) were Universal Numbering System.

**Table No. 1** : Tooth numbering system were found Palmer Notation Method

S. No	Tooth Numbering System	Percentage (Numbers)
1.	Palmer Notation System	85% (n=170)
2.	FDI System	10% (n=20)
3.	Universal Numbering System	5% (n=10)
Grand Total		100% (n=200)

A total of 200 dentists were included in the study, among 200 dentists, 170 (85%) were using Palmer notation system, 20 (10%) were using FDI, while 10 (5%) were using Universal system for numbering the teeth. The palmer notation method was cited as the most commonly used Tooth Numbering System (85%) followed by the FDI Tooth Numbering System, and then, the Universal Numbering System. Results of our study are in agreement with other studies conducted worldwide, especially those performed in developing countries.

In dentistry numbering systems/methods serve as symbols, instead of writing the full form and position of the tooth it is much easy to assign it letter, symbol or number [1, 6].

The Palmer Tooth Numbering System has brought in to use by all of the developing countries as well as almost all of the industrial countries in health services research. The two digit system, FDI system has also been acquired by publishers and by many dental colleges and by comprehensive medical insurance companies (yet, as of the mid-late 1990s, the Zsigmondy numbering system was still broadly used in United Kingdom the United States America. The United States of America has also reported practicing the Universal system. Most of the participators (round about 95%) in the current study accepted that practicing dissimilar Tooth Numbering System shows trouble and misinterpretations, specifically for interaction among clinicians at different dental setups. A misinterpretation may ends on the incorrect tooth extraction. Actually, 14% of revealed professional misconduct case shows incorrect tooth being extracted. For that reason it is normally accepted, that practicing similar Tooth Numbering System should be apply all around the country [4].

The WHO and other major health organizations favor to practice the Palmer Tooth Numbering System. Close to 99% of the participators agreed that the department of Health and the dental colleges ought to share the responsibility of uniting and standardizing the Tooth numbering System throughout the country [5].

Earlier studies in the United Kingdom and United States of America find out that there was great opposition in acquiring modern Tooth Numbering System. Doctors have reported the given opinions in opposition of acquiring the Palmer Tooth Numbering System: impractical in routine practice, tough for elderly staff for learning, satisfaction with present system/method practiced, hesitancy for more than one tooth being extracted, need of enforcement to change, and no clinical benefits in their study suggested to use the Canadians as a representation to modify in acquiring the Palmer Tooth Numbering System in their dental communications.[4].

In United Kingdom two of the systems, Palmer Notation System and the FDI system are familiar to the dentists [13].

Palmer notation System was declared as the Tooth Numbering System which is used frequently in Saudi Arabia's 16 dental colleges out of 20. These results agree with a study conducted in the USA that found that 74% of the 157 fourth-year dental students surveyed preferred the FDI Tooth Numbering System, whereas 16% favor the Universal Tooth Numbering System However, our results contradicts with those conducted by those studied in the United Kingdom dental colleges.

## CONCLUSION

The majority of dentists in Peshawar Khyber Pakhtunkhwa were agreed that practicing various tooth numbering system bring about misinterpretations and confusion and as such, a single system should be put into practice/ apply. The Palmer tooth numbering system is currently the most commonly used tooth numbering system in for both primary and permanent dentition in both academic and non-academic settings in Peshawar Khyber Pakhtunkhwa. The majority of participants agreed that the Palmer tooth numbering system should be used as the tooth numbering system standard.

## REFERENCES

1. Fuller, J.L., Denehy, G.E. and Schulein, T.M., (2010). Anatomic and physiologic considerations of form and function. Concise dental anatomy and morphology. 5th ed. Delhi: Prince Print Process, pp.23-40.
2. Al-Johany, S.S., (2016). Tooth Numbering System in Saudi Arabia: Survey. The Saudi dental journal, 28(4), pp.183-188.

3. Nelson, S.J. and Ash, M.M., (2010). Wheeler's Dental Anatomy, Physiology and Occlusion. 9 [sup] th ed. St. Louis, Mo: Saunders Elsevier.
4. Jada. (2006). Tooth eruption. 137. Available from: [https://www.ada.org/~ /media/ADA/Publications/Files/patient\\_58.ashx](https://www.ada.org/~ /media/ADA/Publications/Files/patient_58.ashx)
5. Mahoor, M.H. and Abdel-Mottaleb, M., (2005). Classification and numbering of teeth in dental bitewing images. Pattern Recognition, 38(4), pp.577-586.
6. Helm, S., (1973). Recording system for the Danish child dental health services. Community dentistry and oral epidemiology, 1(1), pp.3-8.
7. Roberts, C.A. and Manchester, K., 2007. The archaeology of disease. Cornell University Press.
8. Manjunatha, B.S., (2012). CHAPTER Tooth Numbering. Textbook of Dental Anatomy and Oral Physiology, p.24.
9. Ashfaq, A., (2016). Developing an innovative pediatric dental charting system and its clinical application (Doctoral dissertation).
10. Türp, J.C. and Alt, K.W., (1995). Designating teeth: the advantages of the FDI's two-digit system. Quintessence international, 26(7).
11. Kannan, D. and Gurunathan, D., (2016). Comparison of two systems of tooth numbering among undergraduate dental students. Indian Journal of Dental Research, 27(4), p.378.
12. Grace, M., (2000). Dental notation. British dental journal, 188(5), p.229.
13. Ferguson, J.W., (2005). The Palmer notation system and its use with personal computer applications. British dental journal, 198(9), p.551.
14. Akram, A., Fuad, M.D.F., Bashir, U., Pandiyan, N.J., Chakravathy, K., Vishnumukkala, T.R. and Madlena, M., (2015). An assessment of clinical application of a new tooth notation for primary teeth. Journal of International Dental and Medical Research, 8(1), p.7.

#### CITATION OF THIS ARTICLE

M Khan, S Ali, U Zeb. Survey on Tooth Numbering System in Peshawer Khyber Pakhtunkhwa. Bull . Env. Pharmacol. Life Sci., Vol 9[2] January 2020 : 130-133