

## Oral Health Related Habits and Oral Hygiene Practices in Twins- A Pilot Study

Ganesh Shenoy Panchmal<sup>1</sup>, Fawaz Pullishery<sup>2</sup>, Sabin Siddique<sup>3</sup>,  
Vardharajullah V. Ramaih<sup>4</sup>, Vanishree Shirodian<sup>5</sup>.

<sup>1</sup>Senior Professor & HOD, Department of Public Health Dentistry, Yenepoya Dental College, Mangalore.

<sup>2</sup>Senior Lecturer, Department of Public Health Dentistry, Educare Institute of dental sciences, Kerala.

<sup>3</sup>Senior Lecturer Department of Public Health Dentistry, Yenepoya Dental College, Mangalore.

<sup>4,5</sup>Post-graduate student, Department of Public Health Dentistry, Yenepoya Dental College, Mangalore.

Correspondance email: drfawazp@gmail.com

---

### **Abstract:**

**Background:** Oral hygiene habits and practices are influenced largely by genetic and social behaviours. This study was done to assess the oral hygiene habits and practices among a twin population.

**Materials And Methods:** A structured questionnaire was used for collection of sociological data and the oral health related habits and oral hygiene practices of twins were also assessed.

**Results:** 58 percent of the participants brushed their teeth at least twice daily, while 17 percent reported irregular tooth brushing. When the tooth brushing method was seen between identical and non-identical twins the results were not statistically significant. Some of the twins had shown a similarity in oral health related habits.

**Conclusion:** Identical twins had a similarity than non-identical twins to some extent in the oral health practices and habits. It may be concluded that the similarity is due to the same genetic traits among them.

**Keywords:** Twins, Behaviour, Oral Hygiene.

---

### I. Introduction

Family, twin and adoption studies have provided evidence for familial and genetic influences on individual differences in disease risk and in human behavior.<sup>1</sup> The advantage of twin studies is that it allows disentanglement of the shared genetic and environmental factors for the trait of interest. Researchers can estimate the proportion of variance in a trait attributable to genetic variation, versus the proportion that is due to shared environment or unshared environment.

Kodinhi is a village in Malappuram district in Kerala, India. The village is situated close to the town of Tirurangadi and, as of 2013, is home to around 2,500 families. The village, kodinhi, draw attention from many international experts and others after a survey done by locals found an unusually large number of twin births in the region. Though initial estimates put the instance of multiple births at 100 pairs, follow-up surveys found the figure to be closer to 425 pairs (850 individuals) of twins, and two sets of triplets and over 79 pairs of twins within the age group of 0-10 years. Despite several studies being conducted, the exact cause of this phenomenon is in mystery, it is fact that Women from Kodinhi married off to far away places are also known to give birth to twins. According to locals, the oldest known twin pair in the village was born in 1949. Senior citizens of the village pointed out that such a increasing multiple pregnancies were a recent phenomenon of Kodinhi.

This phenomenon of a large number of twin births is not unique to Kodinhi, and has also been observed in the town of Igbo-Ora in Nigeria and Cândido Godói, Brazil. In Igbo-Ora, research has suggested that the multiple births could be related to the eating habits of the women in the region. Though no direct correlation between dietary intake and twin births has been observed, a research study carried out at the University of Lagos Teaching Hospital has suggested that a chemical found in the Igbo-Ora women and the peelings of a widely consumed tuber could account for the high level of multiple births. In the case of Kodinhi, however, no such relationship has been observed, as the residents dietary patterns are not known to be significantly different from the rest of Kerala.

The aim of this study was to assess the oral hygiene practices and oral health related behaviour among twins and also to compare those habits and practices between two members of a twin pair.

## II. Materials and Methods

A cross sectional study was conducted among the twins of Kodhini village in the month of September 2013. A structured questionnaire was used for the collection of sociological data, oral health related habits and oral hygiene practices. The questionnaire was pre-tested and validated. Ethical approval was obtained from Yenepoya Ethical Committee after obtaining permission from the Twins and Kins Association of Kodhini (TAKA) for conducting the study. Twins who gave consent for participating in the study were included with an age group ranging from 4-25 years. Participants who were systemically ill were excluded from the study. Parents were invited to participate in the study as informants to help researchers create information of young children whose age is less than 7 years. A total of 56 pairs of twins and one triplet totally giving a sample of 115 participants were taken for study according to convenience.

A pre tested questionnaire was used for collecting the data which consisted of two parts.

- a) Part 1 included the socio-demographic details of the participants including age, gender, education and family details.
- b) Part 2 consisted of oral health related habits and oral hygiene practices performed by the individuals.

Data obtained were tabulated accordingly and descriptive statistics were used. SPSS version 16.0 was used for statistical analysis.

## III. Results

The particular study was conducted in 56 twin pairs and one triplet consisting of 115 individuals. The age group of the study population ranged from 4 to 25 years with a mean age of  $12.41 \pm 11.35$  years. Out of 56 pairs 24 pairs were identical twins and rest were non identical with gender distribution of 64 males and 51 females. The one triplet in this study belonged to non-identical category.

The results of this study showed that about 17 (14.78%) individuals out of 115 had the habit of Mouth breathing (MB) as reported by the subjects or by the parents. When mouth breathing was present, it was found that the same habit was present in the co-twins of the respective 7 twin pair ( $p=0.021$ ) and 5 pairs in this belonged to the identical category. Out of 115 study subjects 11 (9.56%) had the habit of thumb sucking (TS). Thumb sucking was present in both the members of only 2 pairs and the result was not statistically significant ( $p=0.824$ ). The habit of tongue thrusting (TT) was reported only in 6 individuals (5.2%). It is interesting to note that all the subjects who had this habit (TT) were belonging to the same twin pairs (3 pairs) ( $p=0.0217$ ). Bruxism (BR) were reported in 20 individuals out of 115 study population. Thus Bruxism was seen in between co-twins of respective 9 pairs ( $p=0.0358$ ). Out of 9 pairs who had Bruxism 7 pairs were identical twins and rest 2 pairs were non identical twins and the results were statistically significant ( $p=0.023$ ) (Table 1).

**Table 1: Habits related to oral cavity in Twins**

|                                      | Present |       | Absent |       |
|--------------------------------------|---------|-------|--------|-------|
|                                      | N       | %     | N      | %     |
| <b>Habits related to oral cavity</b> |         |       |        |       |
| Mouth Breathing                      | 17      | 14.78 | 98     | 85.21 |
| Thumb sucking                        | 11      | 9.56  | 104    | 90.43 |
| Tongue thrusting                     | 6       | 5.2   | 109    | 94.78 |
| Bruxism                              | 20      | 17.39 | 95     | 82.60 |
| Pencil biting                        | 10      | 8.7   | 105    | 91.30 |
| Nail biting                          | 8       | 6.95  | 107    | 93.05 |
| Lip biting                           | 3       | 2.60  | 112    | 97.40 |

One of the interesting findings of this particular study was that all the members of the respective 5 twin pairs ( $n=10$ ) reported the habit of Pencil biting (PB) and all the individuals belonged to group of identical pairs and the result was statistically significant ( $p=0.045$ ). The habit of Nail biting (NB) was present in 8 individuals and surprisingly they belonged to same 4 pairs of the identical twins and when it was compared between the respective co-twin member the result was found to be statistically significant ( $p=0.041$ ), whereas lip biting was reported only in 3 individuals and it was not statistically significant ( $p=0.861$ ).

Approximately 58 percent of the study sample brushed their teeth at least twice daily, while 17 percent reported irregular tooth brushing. Vertical method of brushing were reported only in 23 individuals and out of this 14 belonged to their respective seven identical pairs. When brushing method was compared between the individuals of respective identical and non-identical twins the results were not statistically significant ( $p=0.162$ ). 72 percent of the subjects reported the usage of toothbrush and toothpaste to clean their teeth. However, most subjects brushed their teeth before going to bed and/or in the morning. The results were not statistically significant between ( $p=0.143$ ).

#### **IV. Discussion**

Twins are two offspring resulting from the same pregnancy born in close succession. They can be either monozygotic (MZ) or dizygotic (DZ). The rate of MZ twinning is relatively stable, occurring in approximately four pregnancies out of 1000 across countries. DZ twinning rates, by contrast, vary by geographical region; in Asia about 6 in 1000, in Europe and USA about 10-20 in 1000 and in Africa about 40 in 1000 pregnancies are DZ twin pregnancies.

This study presented a comprehensive overview of the oral health related habits and oral hygiene practices of twins. There were no previous studies reported in the literature regarding the habits and practices related to oral health in twins. Studies had reported similarity in dietary pattern and oral health status among twins.<sup>2,3</sup> The findings of our study suggest that identical twins exhibited a correlation in certain oral health related behaviors which suggest a strong genetic and environmental relationship.

It is clear that oral hygiene practices have a direct relationship with oral health status of individuals. Poor oral hygiene practices were reported in people with poor oral health status. Oral hygiene practices of an individual have direct influence in the caries status and periodontal status.<sup>4-10</sup> There are studies reporting association between poor periodontal health and cardiovascular diseases in twins.<sup>11, 12</sup>

Some of the habits reported in this study like tongue thrusting, thumb sucking, bruxism seen in identical twins suggest a positive relation of the genetic traits of the individuals. Other habits such as pencil biting, nail biting could have a genetic influence or they may have been adopted as a result of socio-environmental influence.

Like most of the population based studies our study has also some limitations. Many questions remain for which this study cannot provide answers due to lack of suitable data or other factors. This study was an attempt to analyze the oral health related habits and practices of twins population. Although co-twin analyses control for genetic and shared environmental factors, it is always possible that residual confounding by environmental factors may exist. On the other hand, if identical twins and non-identical twins, are more similar with respect to these environmental risk factors, we may attribute confounding by an environmental factor to a genetic factor. Also the influence of genetic factors on oral hygiene practices and oral health related habits are unclear. There is a need for more confirmatory research in this field to obtain a clear cut influence of these factors on practices and habits related to oral health in twins.

#### **V. Conclusion**

Based on the results of this study it may be concluded that individuals of identical twins had a similarity than non-identical twins in some of the oral health practices and habits which suggest a possible genetic influence on the same. There is a scope for a more advanced study for establishing a positive relation in this regard.

#### **Acknowledgment**

All the authors would like to thank the management of Yenepoya University for funding this research project and also the Twins and Kins Association of Kodinhi for co-operating to carry out the research.

**Conflict of interest:** Not declared

#### **References**

- [1]. Kaprio J, Pulkkinen L, Rose RJ. Genetic and environmental factors in health-related behaviors: studies on Finnish twins and twin families. *Twin Research*. 2002;5(5):366-371.
- [2]. Hasselbalch AL. Genetics of dietary habits and obesity. *Dan Med Bull*. 2010;57:B4182.
- [3]. Tabrizi F, Buhlin K, Gustafsson A, Klinge B. Oral health of monozygotic twins with and without coronary heart disease: a pilot study. *J Clin Periodontol*. 2007;34(3):220-225.

- [4]. Petersen PE, Hoerup N, Poomviset N, Prommajan J, Watanapa A. Oral health status and oral health behaviour of urban and rural schoolchildren in Southern Thailand. *Int Den J.* 2001;51(2):95-102.
- [5]. Zhu L, Petersen PE, Wang HY, Bian JY, Zhang BX. Oral health knowledge, attitudes and behaviour of children and adolescents in China. *Int Den J.* 2003;53(5):289-298.
- [6]. Jürgensen N, Petersen P. Oral health and the impact of socio-behavioural factors in a cross sectional survey of 12-year old school children in Laos. *BMC Oral Health.* 2009;9(1):29.
- [7]. David J, Wang N, Åström A, Kuriakose S. Dental caries and associated factors in 12-year-old schoolchildren in Thiruvananthapuram, Kerala, India. *Int J Paediatr Dent.* 2005;15(6):420-428.
- [8]. Leung WK, Chu C. Dental caries and periodontal status of 12-year-old school children in rural Qinghai, China. *Int Den J.* 2003;53(2):73-78.
- [9]. Casanova-Rosado AJ, Medina-Solís CE, Casanova-Rosado JF, Vallejos-Sánchez AA, Maupomé G, Ávila-Burgos L. Dental caries and associated factors in Mexican schoolchildren aged 6-13 years. *Acta Odontologica.* 2005;63(4):245-251.
- [10]. Jiang H, Petersen PE, Peng B, Tai B, Bian Z. Self-assessed dental health, oral health practices, and general health behaviors in Chinese urban adolescents. *Acta Odontologica.* 2005;63(6):343-352.
- [11]. Kornman KS, Duff GW. Candidate genes as potential links between periodontal and cardiovascular diseases. *Ann Periodontol.* 2001;6(1):48-57.
- [12]. Mucci LA et al. Do genetic factors explain the association between poor oral health and cardiovascular disease? A prospective study among Swedish twins. *Am J Epidemiol.* 2009;170(5):615-621.