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Evaluation of brushing techniques and toothbrush grips among rural and urban children

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Abstract

Aim and objective: The aim of this study is to determine brushing techniques, grip and frequency of tooth brushing in children of rural and urban areas.

Material and method: The study consisted of 200 children. The children were observed while brushing to determine the brushing technique and grip used by them during brushing.

Results: Distal oblique is the most preferred grip by the children and horizontal scrub method is commonly used brushing technique by the children.

Conclusion: Tooth brushing is more common in urban area children as compared to rural. Oral hygiene instructions should be regularly given to children to inculcate health awareness among them.

Keywords: Oral hygiene, brushing techniques, grip

Introduction

Oral hygiene maintenance is the basis for the prevention of dental disease occurrence like dental caries, gingivitis. If good oral hygiene is not maintained it leads to accumulation of plaque. WHO defined Dental plaque as a specific but highly variable structural entity, resulting from sequential colonization of microorganisms on tooth surfaces, restorations & other parts of oral cavity, composed of salivary components like mucin, desquamated epithelial cells, debris & microorganisms, all embedded in extracellular gelatinous matrix [1]. Loesch *et al.* [2] proposed experimental model of gingivitis, which showed gingivitis as the first sign that appears after plaque accumulation just within a few days. A wide range of methods are available for removal of plaque but still Tooth brushing forms the main back bone in maintaining good oral hygiene as toothbrush is the most common aid used for maintaining oral hygiene.

Toothbrush design, brushing duration, parental involvement, and the brushing method, manipulative skill, and manual dexterity of the child are the most cited determinants of the effectiveness of toothbrushing [3]. Apart from these Brushing techniques and toothbrush grips also has an effect on effective toothbrushing.

Beals *et al.* [4] observed five different types of grip namely – distal oblique, oblique, power, precision and spoon. (Figure 1) In these grips, distal oblique and power use palm of hand while oblique, precision and spoon grips rely on fingers [5].

Mostly children are introduced to oral hygiene practices by their parents. Effective plaque removal in young children depends on their learning sequences of coordinated muscular movement and level of motor skill development [6]. It is generally known that toothbrushing by young children under age of 10 years are inefficient in toothbrushing due to lack of motivation and poor manual dexterity at this age [7].

There are several techniques that have been recommended for children which includes horizontal Scrub technique for preschool children, Fones technique and Modified Bass technique for children with mixed dentition [8]. Horizontal scrub technique is the method of choice of brushing by the young children [5]. Despite of the several recommended brushing techniques, there have been decline in oral hygiene status of young children, especially during transition of dentition [9]. Thus, proper oral hygiene in children can be attained with the interplay of proper brushing technique and repeated learning through appropriate communication means. Oral health knowledge is essential for proper oral hygiene and better oral health. Children living in rural areas and concomitantly of lower social economic status

have lacunae in oral health awareness which is seen in their practices of oral hygiene habits. So, the present study was conducted to know whether the rural and urban children have

similar or different oral hygiene practices regarding the toothbrushing technique, toothbrush grip and frequency of toothbrushing.



Fig 1(a): Distal oblique

Fig 1(b): Oblique

Fig 1(c): Power



Fig 1(d): Spoon

Fig 1(e): Precision

Fig 1: Different types of grips

Material and method

The study comprised of 200 students which were divided into two groups, Rural group and urban group. 100 students from rural area and 100 students from urban area aged between 5-11 years were included who fulfilled the inclusion criteria. Children were randomly selected from two different schools one located in the rural area and the other from urban area. Children brought their regular toothbrush and performed toothbrushing, while brushing they were observed and recorded with the help of a videocamera. Recorded videos were seen again and again for assessing brushing technique and toothbrush grip. Questionnaire regarding tooth brushing frequency was given to evaluate oral hygienic routines.

Inclusion criteria

Age 5-11 years
Medically fit

Exclusion criteria

Underlying systemic condition that limited their manual dexterity
Not using a toothbrush to clean their teeth

Results

All the data were collected, statistical analysis was done by using Chi square test to compare the groups. Table 1 and Graph 1 represents children using different grip types. In rural group distal oblique was followed by oblique grip, power grip, precision grip and spoon grip. Similarly, in urban group distal oblique grip was followed by oblique grip, power grip, precision grip, spoon grip. on comparison the data was not statistically significant (P=0.991).

Table 2 and Graph 2 represents children using different toothbrushing technique. In the rural group 98 children used horizontal toothbrushing technique and 2 children used circular method none of them used other methods while in urban group 88 used horizontal method, 2 used circular, 1

used vertical, 7 used horizontal and vertical combination and 2 horizontal, vertical and circular combination. On comparison the data was statistically significant (P=0.0032). Table 3 and Graph 3 shows frequency of tooth brushing among children. The result showed that in rural group mostly students brushed only once a day whereas in urban group there were students who brushed their teeth twice a day and some even thrice a day. The difference was statistically significant (P<0.001)

Table 1: Percentage of children using different grip types

Tooth brush Grip	Urban	Rural
Distal oblique	55	56
Oblique	11	10
Power	14	13
Precision	8	11
Spoon	7	6
Others	3	2
More than one	2	2

Chi-square = 0.844 with 6 degrees of freedom; P = 0.991

Table 2: Percentage of children using different Tooth brushing technique

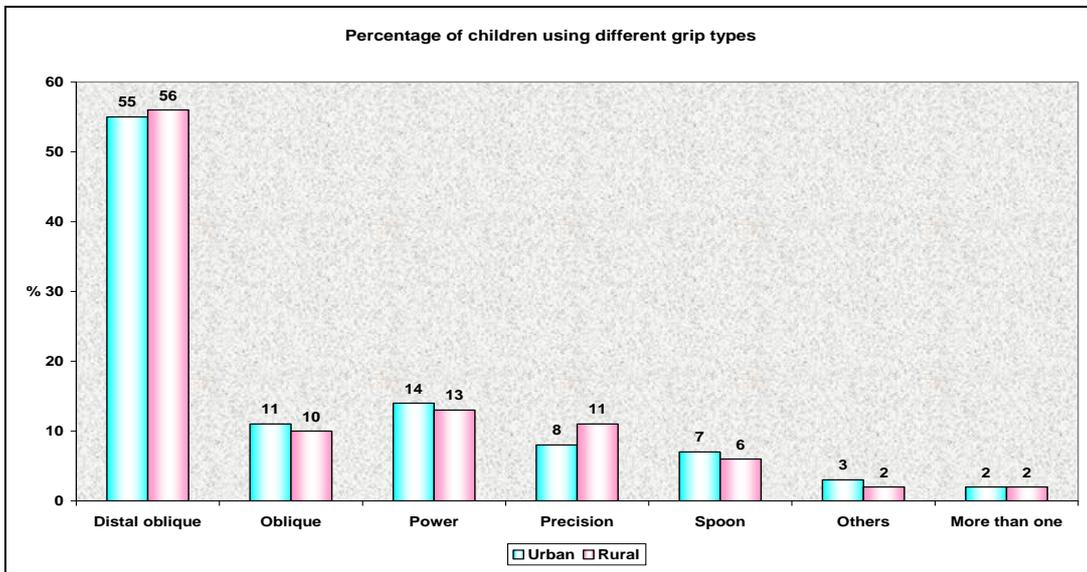
Tooth brushing technique	Urban	Rural
Horizontal	88	98
Circular	2	2
Vertical	1	0
Horizontal + Vertical	7	0
Horizontal + Vertical + Circular	2	0

Chi-square = 10.538 with 4 degrees of freedom; P = 0.032

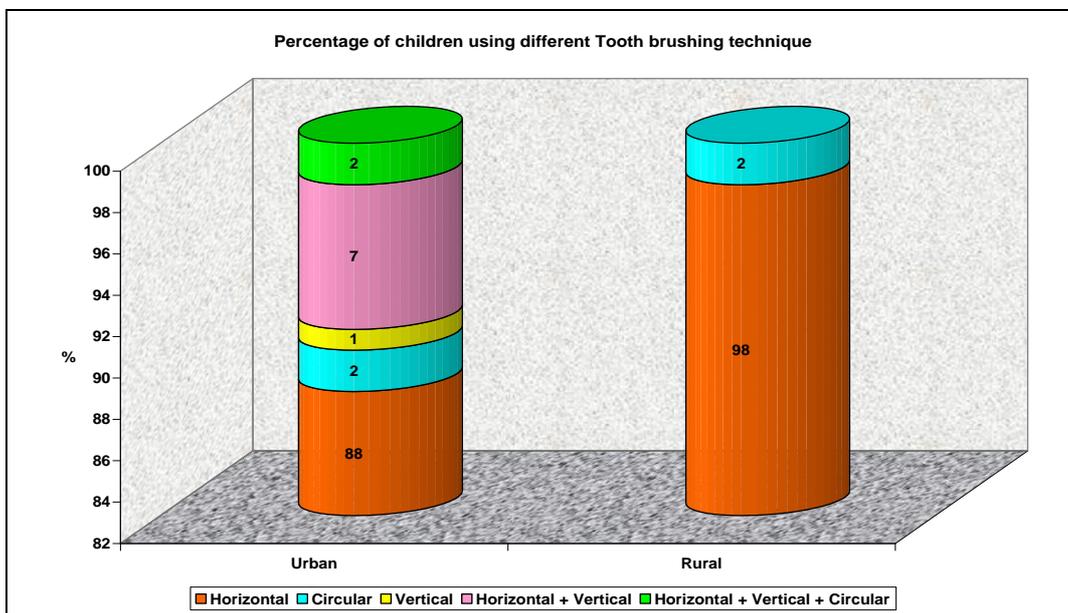
Table 3: Percentage of children according to brushing frequency

Frequency	Urban	Rural
Once	49	89
Twice	46	11
Thrice	5	0
None	0	0

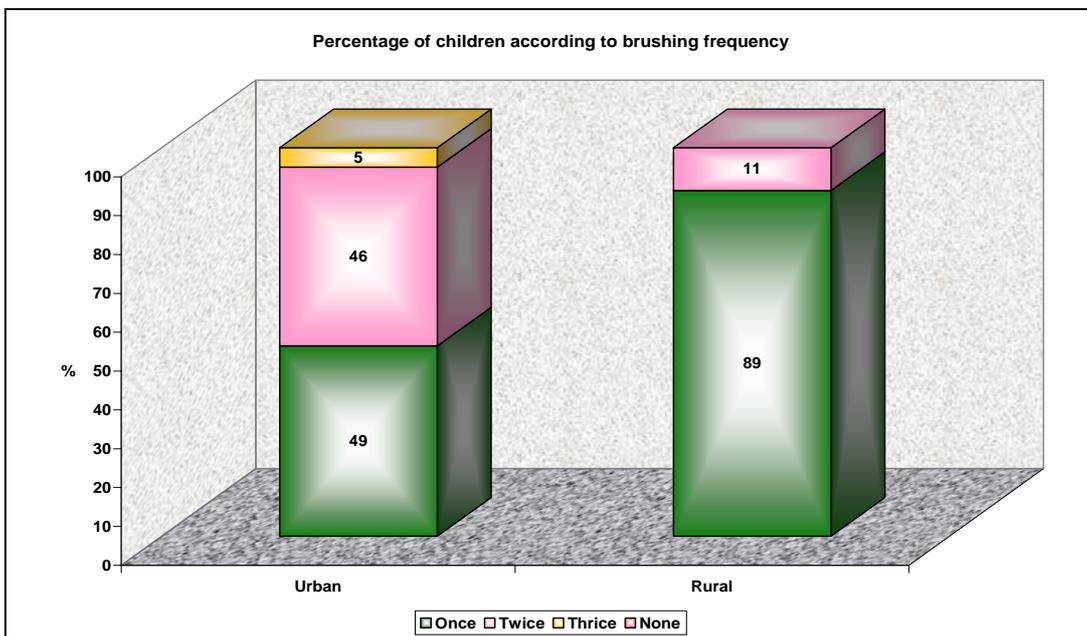
Chi-square = 38.085 with 2 degrees of freedom; P <0.001



Graph 1



Graph 2



Graph 3

Discussion

Toothbrushing is the most common method of achieving and maintaining good oral hygiene. Use of good dentifrices does not assure proper removal of plaque; proper brushing technique, toothbrush grip and frequency of tooth brushing plays an important role in oral health maintenance therefore this study was conducted to evaluate brushing technique, toothbrush grip and frequency of the toothbrushing in children. Horizontal scrub method is more commonly used by children as it may be easily learned. The impact of grip on toothbrushing cannot be underestimated. The ability of children to manipulate toothbrushes in the oral cavity varies according to their dexterity at different stages of their physical and neurological development. It is logical to assume that the more efficient the brushing technique, the better the effectiveness of plaque removal from the various surfaces of the teeth^[10, 11].

Whether grip type and brushing technique are closely related in their combined effect on plaque removal is an important point for clinicians. Children were asked to brush their teeth using their usual technique. Most children brushed their teeth with horizontal scrubbing. Several studies reported that horizontal scrubbing was the method of choice among young children and that they were unable to use other toothbrushing methods. Mescher *et al*^[2] reported that 6- and 8-year-old children had difficulty performing sulcular brushing and that hand function was age related. The development of motor skills associated with toothbrushing behavior in children seems to be age related. Horizontal scrubbing is a suitable technique, when motor skills development is considered.

McDonneal and Domalakes^[13] reported that younger school children instructed in the roll technique reverted to simple scrub. In the present study, the most common grip was the distal oblique grip that is in accordance with Beals *et al.*^[4], Mentos and Atukeren^[10], and Das and Singhal^[11]. Beals *et al* stated that distal oblique was used more than twice as frequently as any other group. Spoon group was relatively uncommon in their study. Spoon grip is more observed in small children than adults.¹⁰ Toothbrushing technique normally comprises vigorous horizontal, vertical, and/or circular movements. Horizontal scrubbing successfully removes the plaque from smooth outer and inner surfaces of the teeth; however, it is generally considered detrimental because vigorous scrubbing can encourage gingival recession and, with a dentifrice of sufficient abrasiveness and a hard textured toothbrush, can create areas of tooth abrasion^[14].

Mielznik-Blaszak *et al.*^[15] concluded that 2.9% brushed their teeth after every meal, 52.9% twice a day. Liliya *et al.*^[16] concluded brushes their teeth 10% rarely during a week, 17% twice a day, 73% once a day. Ahad and gheena^[17] concluded that 46% once a day and 53.20 twice a day. In this study it was seen that 89% of rural children brushed once whereas 46% of the urban children brushed twice a day which shows the difference of oral health awareness among the children of rural and urban population.

Conclusion

Distal oblique is the most preferred grip by the children followed by power and oblique.

Horizontal scrub method is commonly used by the children.

Tooth brushing is more frequent in urban area children compared to rural area children. Oral hygiene instructions should be regularly given to the children so there is oral health awareness among the children.

References

1. World Health Organization Periodontal disease. Tech report series No207. Geneva, USA, 1961
2. Syed SA, Loesche WJ. Bacteriology of Human Experimental Gingivitis: Effect of Plaque Age. *Infect Immun.* 1978; 21:821-829.
3. Sharma S, Yeluri R, Jain A, Munshi A. Effect of toothbrush grip on plaque removal during manual toothbrushing in children. *Journal of Oral Science*, 2012; 54(2):183-190.
4. Beals D, Wong-Paredes M, Allen B, Rutter B, Stegemen J. Grip architecture in manual toothbrushing. *J Dent Res.* 1999; 78:413.
5. Sten OS, Hortense K. Tooth brushing behaviour in children: a study of pressure and stroke frequency. *Pediatr Dent.* 1983; 4:225-227.
6. Simmons S, Smith R, Gelbier S. Effect of oral hygiene instruction on brushing skills in preschool children. *Community Dent Oral Epidemiol.* 1983; 11:193-198.
7. Unkel JH, Fenton SJ, Hobbs G Jr, Frere CL. Toothbrushing ability is related to age in children. *ASDC J Dent Child.* 1995; 62:346-348.
8. Anaise JZ. The toothbrush in plaque removal. *ASDC J Dent Child.* 1975; 42:186-189.
9. Srivastava N, Vasishat A, Gupta G, Rana V. A Comparative Evaluation of Efficacy of Different Teaching Methods of Tooth Brushing in Children Contributors. *Oral Hyg Health.* 2013; 1:118.
10. Mentos A, Atukeren J. A study of manual toothbrushing skills in children aged 3 to 11 years. *J Clin Pediatr Dent.* 2002; 27:91-94.
11. Das UM, Singhal P. Tooth brushing skills for the children aged 3-11 years. *J Indian Soc Pedod Prev Dent.* 2009; 27:104-107.
12. Mescher KD, Brine P, Biller I. Ability of elementary school children to perform sulcular toothbrushing as related to their hand functionability. *Pediatr Dent.* 1980; 2:31-36.
13. McDonnell CH, Domalakes EF. Effects of toothbrushing with dentifrices containing chlorophyllin on gingivitis. *J Periodontol.* 1952; 23:219-228.
14. Piotrowski BT, Gillette WB, Hancock EB. Examining the prevalence and characteristics of abfraction-like cervical lesions in a population of U. S. veterans. *J Am Dent Assoc.* 2001; 132:1694-1701.
15. Mielznik-Blaszak M, Krawczyk D, Kuc D, Zawislak M, Pels E. Hygienic habits and the dental condition in 12-year-old children. *Adv Med Sci.* 2006; 51(1):142-4.
16. Doichinova L, Mitova N. Assessment of oral hygiene habits in children 6 to 12 years. *Journal of IMAB-Annual Proceeding Scientific Papers.* 2014; 20(5):664-8.