

A Comparative Study of Different Oral Health Measures in a Population of Rajasthan

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Abstract:

Background: The maintenance of oral hygiene is critical for anticipation of innumerable oral as well as systemic diseases. Different populations utilizes various oral hygiene measures skillfully since ancient times such as toothbrushes and dentifrices.

Aims & Objectives: Evaluation and comparison different traditional oral hygiene measures with the use of toothpaste-toothbrush, the most recognized method of oral hygiene maintenance in plaque-cleaning efficiency, recession and tooth wear.

Material and Methods: A cross sectional study done amongst the population of small town in Rajasthan.

Results: Total 201 traditional oral hygiene method users were compared with same number of toothpaste-brush users. Amongst the patients reported there were maximum tooth powder users (46%) as compared to other traditional measures such as chew stick (33%) and salt/oil. Out of tooth powder users; almost 28 % reported using red toothpowder which gave an impression as tooth wear was also more severe among the toothpowder users.

Conclusions: Toothpaste- toothbrush was found to be more effective in controlling plaque, gingival recession and tooth wearing.

Keywords: Periodontitis, toothpaste, traditional methods.

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I. Introduction

Oral health is said to be the mirror of general health. It is vigorous for leading an excellence lifespan. In adult's periodontitis is consider to be the foremost cause of tooth wearing. India has mixed population, people are practicing different traditional methods for oral hygiene maintenance such as commercial toothpastes, charcoal or tobacco- based toothpastes, neemstick (chew stick /miswak) or simply salt and oil by finger method.¹ Periodontal disease is considered by loss of supporting tissues of the teeth which affect patient's health directly.² This is most commonly found in rural and semi- urban areas due to illiteracy and lack of awareness whereas people belonging to lower socioeconomic groups practice traditional oral hygiene measures due to its lower cost, as these are comparatively cheaper and because of certain misapprehensions concerning their advantageous effects.³ Professionally it has been proven that utilizing these products, even for short duration of 6-12 months, had resulted in extreme tooth wearing, reduced clinical crown height resulting in collapsing bite and second most common as hypersensitivity due to exposure of dentin and sometimes even pulp as a result of which it requires widespread treatment such as restorations, endodontic treatment, sometimes even extraction of teeth and its fabrication as per need. In few cases, there is requirement of technique- sensitive measures of full- mouth rehabilitation in order to restore the lost which is time- consuming, require multiple sittings and also economical strengthening.

This paper represents a cross- sectional study to evaluate the influence of these traditional oral hygiene measures on tooth loss, gingival recession, and gingival bleeding.

II. Material And Methods:

A cross-sectional study was conducted in a camp conducted in a small town in Rajasthan. Institutional ethical clearance was obtained, and patients' informed consent was taken. Therefore, a total of 201 individuals using traditional oral hygiene methods and an equal number using toothpaste and toothbrush were included as controls in the study. These traditional oral hygiene measures included use of toothpowder with finger or with toothbrush, with salt/oil, chew sticks (miswak), tobacco powder. Tooth wear index given by Smith and Knight to measure tooth wear, Ramfjord index to measure gingival bleeding, Oral Hygiene Index- Simplified to measure debris and calculus present, and a calibrated probe to measure gingival recession from CE junction were used.⁴⁻⁶ The recession was graded as follows:

- 0 = No recession
- 1 = Recession <3 mm
- 2 = >3 mm but <6 mm
- 3 = >6 mm
- X = Excluded
- 9 = Not recorded.

TOOTH POWDER			CHEWSTICK			OTHER TRADITIONAL METHODS			TOOTHPASTE+TOOTHBRUSH		
MALE N(%)	FEMALE N(%)	TOTAL N(%)	MALE N(%)	FEMALE N(%)	TOTAL N(%)	MALE N(%)	FEMALE N(%)	TOTAL N(%)	MALE N(%)	FEMALE N(%)	TOTAL N(%)
51(25.37)	41(20.40)	92(45.77)	36(17.91)	30(14.93)	66(32.83)	5(2.48)	38(18.91)	43(21.39)	131(65.17)	70(34.83)	201(100)

TABLE 1: COMPARATIVE RESULT OF ALL ORAL HYGIENE MEASURES

III. Results:

In the present study there was a total intake of 402 individuals, 201 each in the study and the control groups were included with gender-wise distribution shown in Table 1. The inference in the present study was about 46% of the entities used toothpowder as the primary

measure of oral hygiene whereas other commercial measures such as chew stick and salt and oil were used by 33% and only 21% respectively.

OHI-S scale was measured and was graded as good (0.0-1.6), fair (1.7-3), poor(3.1-6) and the result amongst study group came as good(24%), fair(15%), poor(59%) and control group as good(32%), fair(52%), poor(15%)[Table 2]. Chi square test was done, which was found to be statistically significant (P value = < 0.00001 at $p < 0.05$). There was statistically significant difference in gingival recession (P value = < 0.00001 at $p < 0.05$) [Tables 3]. Tooth wear was higher in individuals above the age of 41 years as compared to those <40 years. However, the difference between toothpowder users (65%) and other traditional measures (34%) in severity of tooth wear (Tooth wear score higher in grading 3 and 4) [Table 4].The severity of tooth wear caused by different toothpowders was also evaluated and was found to be the peak with the use of red toothpowder followed by white toothpowder [Table 5].

	GOOD(0.0-1.6)	FAIR(1.7-3)	POOR(3.1-6)	TOTAL
STUDY GROUP N%	50(24.87)	32(15.92)	119(59.20)	201(100)
CONTROL GROUP N%	65(32.33)	105(52.23)	31(15.42)	201(100)

TABLE 2: ORAL HYGIENE INDEX IN STUDY AND CONTROL GROUP

GROUP	RECESSION SCORE				TOTAL
	0	1	2	3	
STUDY GROUP N(%)	21(10.45)	20(9.95)	71(35.32)	89(44.28)	201(100)
CONTROL GROUP N(%)	94(46.76)	72(35.82)	29(14.42)	6(2.98)	201(100)

TABLE 3: COMPARISON OF RECESSION SCORE AMONGST STUDY AND CONTROL GROUP

TOOTH WEAR	1	2	3	4	5	TOTAL
OTHER TRADITIONAL METHODS	8(3.98)	13(6.46)	31(15.42)	15(7.46)	3(1.49)	70(34.83)
TOOTH WEAR SCORE N (%)	22(10.94)	31(15.42)	40(19.90)	30(14.92)	8(3.98)	131(65.17)

TABLE 4: COMPARISON OF TOOTH-WEAR AMONGST ALL TRADITIONAL METHOD

TOOTH WEAR SCORE						TOTAL
	1	2	3	4	5	
WHITE N(%)	2(0.99)	11(5.47)	22(10.94)	18(8.95)	7(3.48)	40
RED N (%)	8(3.98)	26(12.93)	41(28.39)	44(21.89)	22(10.94)	141

TABLE 5: COMPARISON OF TOOTH-WEARING IN RED AND WHITE TOOTHPOWDER

IV. Discussion:

Maintenance of good oral hygiene is essential for effective plaque removal by using effective brushing technique in adequate brushing time. In our study, 96.7% of the participants used toothbrushes and toothpaste to clean their teeth because of its convenience and low cost of toothpaste whereas chew stick and tooth powder is also an inexpensive and affordable method of maintaining good oral as well as general health but it has certain demerits as chew stick fibers difficult to reach lingually.⁷

The current study concluded that for plaque removal toothpaste- toothbrush is a very effective method than other traditional measures as they cause increased gingival bleeding and recession. In the study group the recession was about 89% and control group about 6%.⁸⁻⁹

Hollist and Khoory et al concluded that extreme scouring of chew stick and tooth powder lead to abrasion and recession on the anterior teeth resulting in a compromised aesthetic zone which was in favor of the present study.¹⁰⁻¹¹ Another study done by Eid *et al.* concluded chew stick as one of the etiology of gingival recession as compared to toothbrush users which was same as in the present

study.¹² It has been proved in various surveys that recently cut chew stick is not having any ill effect on oral health but shows harmful effect after 24 h.¹³ Any damages such as gingival recession, tooth wear and severe periodontal pockets are mainly due to aggressive, excessive and improper use of traditional measures hence can be controlled by educating patients for using proper technique carefully.

Similarly, another important finding of the present study was the extreme tooth wear detected with traditional hygiene methods. There are two types of tooth wearing - localized or generalized.¹⁴⁻¹⁶

Localized are habit or occupation associated such as pipe smoking, nut and seed cracking, nail biting, and hairpin holding whereas generalized is generally associated to oral hygiene measures and products used, time and frequency of teeth cleaning.¹⁷⁻¹⁹

In the current study it was concluded that toothpowder shows 65% tooth wearing on comparing to the other traditional methods as 34%. Apart from that there was the comparative evaluation done in different tooth powders which concluded that red toothpowder in which the main ingredient is tobacco containing, due to its addiction shows maximum wearing in score 3,4 (according to Smith and Knight Index) as 28% and 22% respectively. The addiction shows anesthetic effect as a result of which the progression of tooth wear goes unchecked, without the patient suffering much pain. As the etiology of tooth wear, bleeding, and gingival recession is multifactorial, the exact cause-effect relationship between use of traditional methods of oral hygiene and harmful effects observed cannot be established.

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