

EVALUATION OF A COMBINATION OF GINGIVAL PHYSIOTHERAPY, FLOSSING, AND BRUSHING TECHNIQUE THROUGH IN-OFFICE OBSERVATION

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ABSTRACT

Objective: Oral physiotherapy is described as the maintenance of oral hygiene, and its goal is the daily, full elimination of plaque with the least amount of work, time, and equipment feasible.

Methods: Materials and procedures In order to evaluate the brushing time, the effective duration of brushing, the brushing pattern, the order of sextants, and the use of dental floss, 30 patients aged 18 to 65 were divided into two groups, one without prior instruction, and the other in which the technique of modified Stillman brushing and flossing was explained to them.

Results: Despite instruction in hygiene techniques, better results of instruction were found in the control group.

Conclusion: Brushing technique was clearly preserved in the control group, although 10% had deficiencies. With this method, we can demonstrate the effectiveness of teaching a certain brushing technique only to tyodont patients, probably, some additional method would strengthen the oral physiotherapy skills of the patient.

Keywords: Oral physiotherapy, Brushing, Dental floss, Ability

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INTRODUCTION

Periodontal disease is thought to affect 25 to 30% of adults in the 35 to 54 age group globally [1], with up to 69% of persons in India being over the age of 65 [2].

Bacterial overgrowth brought on by poor oral hygiene can result in diseases like chronic periodontitis [3], whose inflammatory course can occasionally cause changes in bone morphology that aid in the formation of periodontal pockets [4] and the loss of clinical attachment level [5]. The goal of non-surgical periodontal therapy is a mechanical scaling of the dental surfaces [6], where adequate plaque management is essential for long-term success through patient participation and knowledge [7]. Plaque control is the routine removal of dental plaque and the prevention of its accumulation on dental and gingival surfaces [8]. As a result, the patient is advised to regularly brush their teeth using circular, horizontal, and vibratory movements [9], and dental floss has also been shown to be effective over the long term [10].

However, it has been discovered that only 45% of patients are able to comprehend and possess the necessary skills to carry out dental hygiene practises, and only 25% are successful in using floss [11]. The purpose of the current study was to assess the patient's ability to duplicate oral hygiene practises, such as proper brushing technique and use of dental floss, following oral physiotherapy.

MATERIALS AND METHODS

Population and study design

The sample size was calculated using the quantitative formula, applying $z = 1.96$ for 95% reliability, $p = 0.35$, $q = 0.65$, and $e = 14\%$, resulting in a sample size of 29, with a total of 10 patients for the control group and 19 for the experimental group. This was done due to the variables that needed to be studied.

At Jaipur Dental College, patients were recruited for the study using an experimental comparative design.

Patients between the ages of 18 and 65 were enrolled in the trial I [12].

The study was divided into two groups: the control group was conducted by the staff of Bhatnagar Hospital and the experimental

group consisted of patients attending Bhatnagar Hospital for the first time. Pregnant or lactating patients, smokers and breathers, patients with any physical disability in performing oral hygiene, including patients, were excluded from the study. Patients who did not continue the study were excluded, as were those with gingivitis, periodontitis, fixed bridges and orthodontic brackets during evaluation, and data where oral hygiene techniques could not be properly evaluated.

Standardization of brushing technique

When teaching the brushing technique, the patients were taught with the modified Stillman brushing technique, which was taught according to the original technique: the ends of the brushes were placed on the neck of the tooth and partially next to the gingiva, pointing to the apical. direction and obliquely to the longitudinal axis of the teeth, the brush must be activated with 20 short back and forth movements.

The biting surfaces of the molars and premolars are cleaned with bristles that are perpendicular to the occlusal plane and penetrate through the grooves and interproximal spaces.

The patient was given a #526 brush to perform this technique.

For the flossing technique, patients were instructed to cut a 30–45 cm wide dental floss, then roll it around the fingers, pull the floss tightly between the thumb and middle finger, and move through each contact area. Once the wire is below the point of contact, wrap the wire around the tooth, moving it firmly into the sulcus and heart, repeating this several times.

After standardization, the patient's clinical history was later taken to explain the study with informed consent and instructions on tyodont oral hygiene techniques, except for the control group, to whom the brushing and flossing technique was not explained.

Monitoring of oral physiotherapy

Once the technique was explained, the patient returned to the second appointment with the required brush and thread, and the following points were analyzed, which were given a number value for their tabulation:

Brushing time: Time between the first brush contacts with the tooth until the last brushing action (min).

Effective brushing duration: Effective time in which the patient dedicates time to brushing without interruptions such as rinsing, spitting or resting (min).

Brushing pattern: Five brushing patterns were classified into: *Circular* movement of the brush head and ends of the bristles into one or two sextants, *Horizontal-Linear* anterior and posterior movement in horizontal direction, parallel to the axis of occlusion, *Vertical-Linear* movements of cervical to coronal area, parallel to the dental axis, *Vertical-Revolving* the movement is parallel to the dental axis with an additional rotary movement on the same axis of the tooth, *unspecific* if it could not be assigned to none of the previous categories.

Order of sextant: Complete if the patient started a sextant and finished brushing, incomplete if the patient started a quadrant and did not finish.

Flossing: When the thread was threaded in the interproximal space, vertical movements were made (up and down) parallel to the tooth axis at least twice. Inadequate horizontal movements, without movement (brief insertion in the interproximal space and immediate removal).

Ethical considerations

The study was approved by Bhatnagar Hospital where each patient was given informed consent prior to making the clinical history.

Analysis of data

For the analysis of results, the goodness test and an analytical model were used to verify hypothesis tests using the Chi-square test, both tests were performed with 95% reliability.

RESULTS AND DISCUSSION

Oral physiotherapy monitoring

When reviewing and to evaluate all aspects:

Brushing time: In the evaluation of the brushing time, it was found that the average time in the experimental group was 3:05 min and in the control group it was 5:36 min (table 1).

Effective brushing duration: The effective brushing time was evaluated, that is to say the time in which the patient dedicate time to brushing without interruptions such as rinsing, spitting or resting or change of hand, here a significant difference between both groups was found (p = 0.002), since that in the control group the average was 5 min with 28 seconds and in the experimental group it was 2 min with 51 seconds.

Brushing pattern: It was found that 60% of the patients in the control group performed a linear vertical pattern and 40% a vertical rotating pattern, while the experimental group performed a vertical rotary pattern (10%), a linear vertical pattern (45%), a linear horizontal pattern in 5% and a nonspecific pattern in 40% (p=0.217) (table 2).

Order of sextant: When evaluating the sextant order, it was evaluated if the patient started the sextant and finished it (complete), or if the sextant was not finished (incomplete), where a significant difference was found (p = 0.008) since 55% of the patients of the experimental group managed to complete the sextant, unlike the control group where 90% of the patients finished the sextant (table 3).

Flossing: During the review of the filming, the use of dental floss was evaluated, being adequate in 25% of the experimental group and in 60% of the control group and inadequate in 75% of the experimental group and 40% of the control group, obtaining results statistically significant (p=0.0281).

Table 1: Averages of the effective brushing time between the study groups

Group	n	Mean	SD	t	p
Experimental	20	2 min. 51 Sec	1 min. 58 Sec.	3.35	0.002
Control	10	5 min.28 Sec	2 min.6 Sec.		

Table 2: Evaluation of the brushing pattern according to the study group (t = 0.786, p=0.217)

Pattern	Control		Experimental	
	n	%	n	%
Inespecific	0	0.00	8	40.00
Horizontal-Linear	0	0.00	1	5.00
Vertical-Linear	6	60.00	9	45.00
Vertical-Rolving	4	40.00	2	10.00
Total	10	100	20	100

Table 3: Order of the sextants according to the study group (t=2.39, p=0.008)

Pattern	Control		Experimental	
	n	%	n	%
Complete	9	90.00	11	55.00
Incomplete	1	10.00	9	45.00
Total	10	100	20	100

Table 4: Evaluation of the use of dental floss according to the study group (t=1.961, p=0.0281)

Pattern	Control		Experimental	
	n	%	n	%
Complete	6	60.00	5	25.00
Incomplete	4	40.00	15	75.00
Total	10	100	20	100

DISCUSSION

The purpose of this study was to confirm the understanding of the technique, not its effectiveness. Its purpose was to improve our

physiotherapy guidelines, so the vision for future applications is to improve the simplified oral hygiene index and better results in our periodontal treatment. Treatment that primarily benefits the patient.

Currently, there is insufficient research to reveal the brushing pattern of patients through office presentation, but in 2014, Winterfeld *et al.* evaluated brushing pattern, total time, and effective time of brushing and floss flow. He also stated that most patients completed the brushing cycle, except for occlusal surfaces, and the most common brushing pattern was horizontal and circular, which is different from our study because vertical linear was the most common in both groups [13].

In a 2009 state population study between the average of the periodontal index obtained by sextants, Garza emphasized that sextants with a lower periodontal index were similar to the results of our study in the third and fifth, where most patients weighed the brush. On the 3rd and 5th sextants [15].

CONCLUSION

Based on the results of this study, it can be concluded that the average brushing time in the experimental group was 3:05 min and in the control group 5:36 min, of which the effective brushing time was 5:28. In the control group and 2:51 in the experimental group. The most frequently used brushing pattern was linear vertical, 60% in the control group and 45% in the experimental group. Despite the instructions of the experimental group, it turned out that only 55% of the experimental group managed to complete the sexting order, in contrast to 90% of the control group, and in addition, only 25% of the experimental group managed to string correctly, in contrast to the control group, which had 60%. Brushing technique was clearly preserved in the control group, although 10% had deficiencies. With this method, we can demonstrate the effectiveness of teaching a certain brushing technique only to typodont patients; probably, some additional method would strengthen the oral physiotherapy skills of the patient.

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Nil

AUTHORS CONTRIBUTIONS

All the authors have contributed equally.

CONFLICT OF INTERESTS

Declared none

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