

# Time consumption of dental hygienist performance in hygienic phase and recall

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## ABSTRACT

*Introduction of a hygienic phase and recall in prevention and patient treatment at the dentist's office plan is an inevitable part of drawing up of such plan. A dental hygienist performs examination and treatment during the hygienic phase and recall and thus he saves time for the dentist, who devotes his time mostly to therapy. The authors monitored time consumption in set of 256 patients examined and treated at the Dental Hygienic Clinic of the Teaching Hospital with Policlinics in Presov. During the hygienic phase and recall the time consumption of the dental hygienist, working in the branch for 8 years, was in average 130 minutes for one patient.*

## INTRODUCTION

**T**he most common performance at dentist's offices of many countries is treatment of dental caries and their complications. If a filling or crown is made to a tooth with accumulated plaque, where gum often bleeds, such treatment will not be efficient enough. Prior to each definite treatment of the patient it is necessary to examine and remove bacterial plaque from teeth and their prosthesis.

Insufficient attention is paid to treating the periodontium, although the reason for loss of many teeth is untreated periodontitis. Little is

said about time consumption for treatment during the hygienic phase and recall.

Adjustment of hygienic conditions in the oral environment is time consuming. The most basic and important performances are motivation, instruction, cleaning and adjustment of teeth surfaces and their prosthesis, polishing, and tooth fluoridation.

The greater part of authors include in the hygienic phase performances, which relate to oral hygiene, periodontology, or extraction of incurable teeth. Their effect is indisputable (6).

The lesser part of authors includes in the hygienic phase also other hygienic performances – endodontia, excavation of caries

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sockets and making of temporary fillings. We cannot determine a definite treatment plan without a finished endodontic treatment (36, 23). During the hygienic phase it is possible to carry out articulation grinding, odontoplastics, and some other performances (33).

In order to make the hygienic phase most effective, it is carried out during several calls. The number of calls is usually from two to six, depending on the type of the patient.

The aim of the work was to find out:

1. The average number of calls for one patient in the hygienic phase and recall.
2. The average number of minutes for one call in the hygienic phase and recall.
3. Time consumption for the entire hygienic phase and recall with regard to the age, sex, and type of the patient.
4. Time consumption for motivation, instruction, supragingival scaling, subgingival scaling, adjustment of filled surfaces and fluoridation, endodontic treatment, and extractions of incurable teeth during the first and subsequent calls, with regards to the patients' age, sex, and type. □

## MATERIAL AND METHODS

We monitored a number of 256 patients. The dental hygienist working in the branch for 8 years performed examination and dental hygiene. The dentist carried out the treatment. Both of them were calibrated to the unified procedure of examination and evaluation.

On the basis of the PBI-index and X-ray pictures motivation was performed with each patient by means of a colour motivation atlas. Re-motivation was performed on the basis of PBI follow-up examination, which the patient followed in the mirror and the patient was always informed on the result. The duration of each call was accurately measured by a digital timekeeper. Data was registered into ready tables as per performances. Time consumption of individual calls for individual performances was assessed. The overall completion of the hygienic phase and recall as well as the optimum structure of patient preparation for following examination was evaluated. Each following call in the hygienic phase was after 10 or 14 days, recall after 6 months from the last call in the hygienic phase.

Patients were divided into 4 groups, each group containing an equal number of men and women. Patients were aged from 18 to 60 years. They had from 14 to 28 teeth, they were healthy in general, and did not take any drugs.

The first group – common patients had maximum three fillings (caries, extracted teeth), they did not have periodontitis.

The second group – cario-active patients had more than three fillings (more caries, extracted teeth), they did not have periodontitis.

The third group – periodontal patients had maximum three fillings (caries, extracted teeth), they had periodontitis.

The fourth group – cario-periodontal patients had more than three fillings (more caries, extracted teeth), they had periodontitis.

With patients with caries risk, motivation and re-motivation were performed also on the basis of diet history after the diet protocol was examined. Each patient responded orally to the following questions:

1. What do you drink and eat for your breakfast most often?
2. Do you clean your teeth prior or after breakfast?
3. Do you put sugar in your coffee, tea, what drinks do you drink and when?
4. How many times during a day do you eat? Are your meals regular? Do you clean your teeth after each meal?
5. Do you eat and drink anything after dinner? State what most often.
6. When do you clean your teeth in the evening?
7. What aids do you use daily, what form time to time?
8. Are you on a diet? What kind of a diet and how often are you on a diet?
9. What fluoridation preparations do you use?
10. What are your daily oral hygiene habits?

After diet analysis, the patient was informed on the effect of sugars – the involvement of their amount and frequency of daily consumption in the occurrence of caries.

The possibility of caries occurrence after consumption of sugars and acid meals and drinks was explained to the patient. At the same time information was given on the role of fluorides for enamel remineralisation, fluoride sources, as well as the recommended dose of fluoride intake.

During the first call, with regard to the PBI-index, we mostly instructed the patients on the

proper use of the interdental brush. During the second call dental floss was introduced.

With periodontal patients motivation and re-motivation were performed on the basis of the PBI examination, X-rays, and activity of periodontal pockets. It mostly concerned oral hygiene. Instruction and re-instruction were performed directly on the patient in front of a mirror. We started with techniques and aids the patient already knew and used. During the first call we instructed these patients on cleaning the interdental spaces using an interdental brush. During following calls, after re-instruction we instructed the patients on cleaning of periodontal packet.

Common patients and patients with caries risk were instructed on cleaning the interdental spaces with an interdental brush during the first call. During following calls, after re-instruction, we introduced flossing.

According to the type of teeth pathology and periodontal condition, we have instructed individual methods by a toothbrush. The most common was Bass technique by a one-volume toothbrush or toothbrush with superfine fibres. With patients with gingival retraction we introduced the Stillman technique by a toothbrush with superfine curved dense fibres.

During the hygienic phase the dental physician extracted untreatable teeth and performed endodontic treatment, mostly during two calls. During the first call the contents of

the root canal were removed under anaesthesia, the root canal length was determined using a X-ray with a root tool, the root was widened to 35-40 according to ISO, and a temporary calcium hydroxide root canal filling (calxyd) was placed. The crown was temporarily filled with Cavit. During the second call, after complete treatment and sufficient expansion, the root canal was filled by lateral condensation with either AH Plus paste or Endomethasone, and gutta-percha points. Glass-ionomer cement temporarily closed the crown. Teeth with deep caries received temporary fillings after carious dentine removal.

An untreatable tooth was defined as a destructed tooth root or a tooth with unsatisfactory endodontic treatment and no possibility for a correct re-treatment. Teeth extracted due to other reasons (jaw-orthopaedic indication, extraction of eights) were not included in the duration of the hygienic phase. The extraction was a part of the treatment, not a part of adjustment of hygienic conditions. □

**RESULTS**

1. The average number of minutes for one call in the hygienic phase and recall.

The average number of minutes for one call according to the type and sex of the patient was between 32 and 81 minutes (Figure 1). If

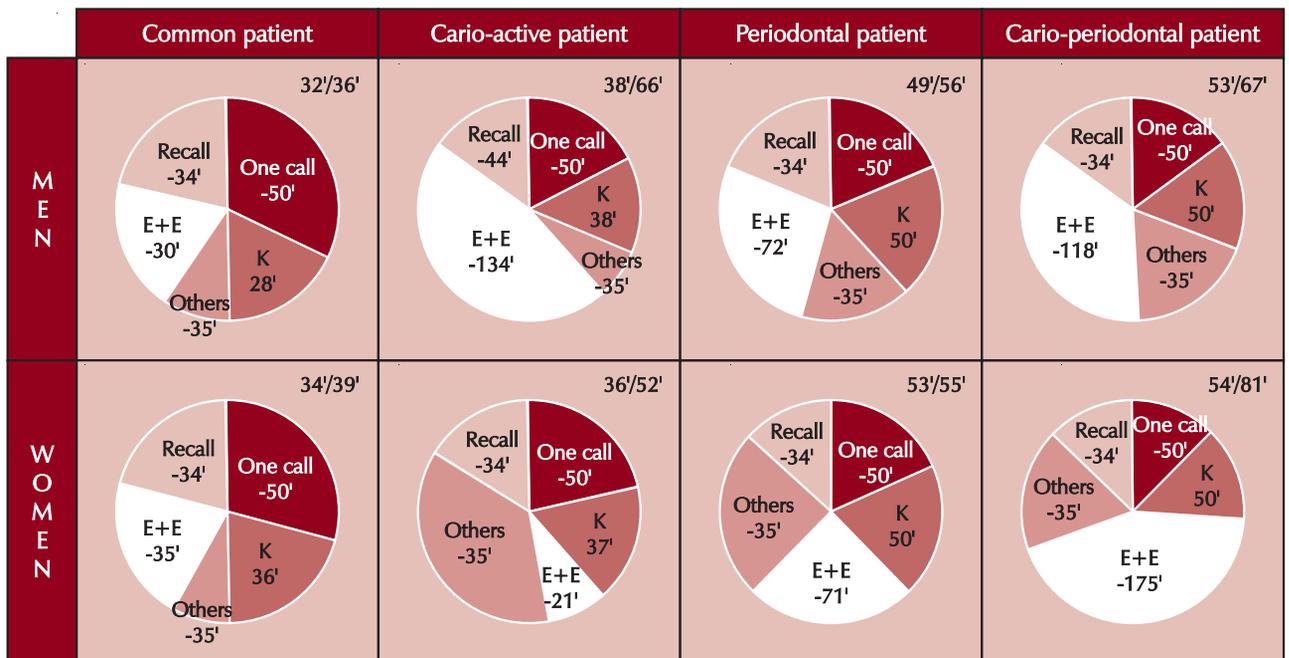


FIGURE 1. Average number of minutes for one call of the patient in the hygienic phase and recall

we compare the amounts of time needed for one call we can see that there are significant differences with regard to the type of the patient. It is a common patient who needs the lowest time for one call (32-39 min.). The corresponding

duration for cario-active patients is 36-66 minutes, for periodontal patients 49-56 minutes, and the cario-periodontal patient needs the longest time – 53 to 81 minutes. Differences between sexes were not significant.

2. The number of calls for one patient in the hygienic phase and recall + endodontic treatment + extractions was between 2 and 6 calls.

When comparing the number of calls necessary for treatment of the patient in the hygienic phase and recall there are differences in the number of necessary calls with regard to the type of the patient. The common and cario-active patient needs an average of 2.5 calls, while periodontal and cario-periodontal patients needs 6.7 calls.

Time consumption of the hygienic phase in average for one patient without endodontic treatment is as follows:

- common patient 98 minutes,
- cario-active patient 108 minutes,
- periodontal patient 154 minutes,
- cario-periodontal patient 164 minutes.

Time consumption for the hygienic phase in average for one patient including endodontic treatment and extraction of incurable teeth was:

- common patient ..... 130 minutes,
- cario-active patient ..... 198 minutes,
- periodontal patient ..... 226 minutes,
- cario-periodontal patient ..... 310 minutes.

If we compare the number of calls and average number of minutes necessary for one call, time consumption for treatment of the common patient during the hygienic phase is the lowest. Time consumption for treatment of the cario-periodontal patient is the highest.

3. The amount of time (min.) needed for individual performances during the hygienic phase and recall. The average number of minutes for the entire hygienic phase and recall was 3 hours and 17 minutes.

4. The average time consumption during individual performances is given in graphs 2 and 3. **Figure 2** shows the amount of time (min.) needed for individual performances during the hygienic phase and recall of common and cario-active patients. **Figure 3** shows the amount of time (min.) needed for individual performances during the hygienic phase and recall of periodontal and cario-periodontal patients.

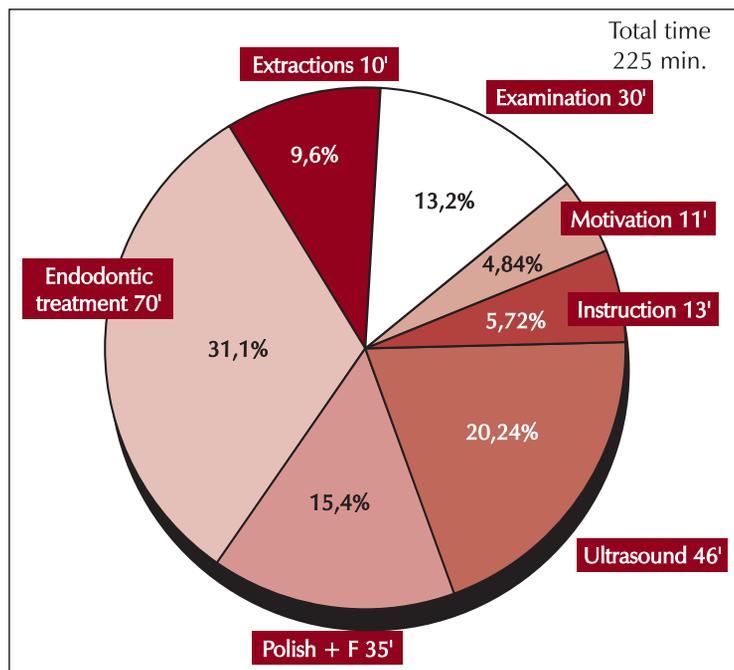


FIGURE 2. Time of treatment (min.) necessary for individual performances during the hygienic phase and recall. Common and cariologic patients

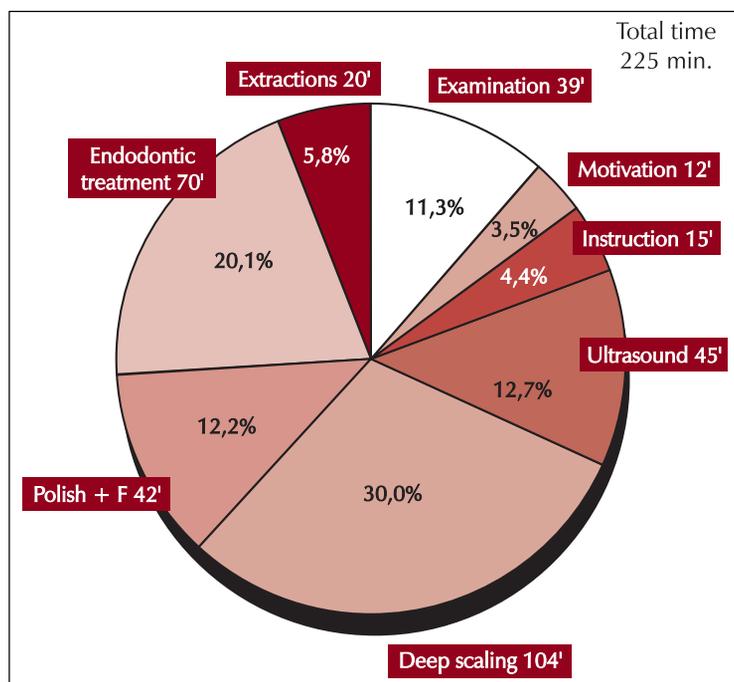


FIGURE 3. Time of treatment (min.) necessary for individual performances during the hygienic phase and recall. Periodontal and cario-periodontal patients

Duration of each phase carried out by the dental hygienist and dentist are given, namely for:

1. motivation
2. instruction
3. scaling
4. subgingival scaling
5. adjustment of fillings, polishing, fluoridation
6. endodontic treatment
7. extraction of untreatable teeth. □

## DISCUSSION

Looking at the above results from a practical point of view, it is inevitable to state that time consumption for preparation and treatment of the patient during the hygienic phase is really very high.

It is also necessary to add to the times given in our work a certain amount of time that passes from the entry of a patient into the office, to his/her seating in the dental chair and preparation for treatment, including a time for washing the attendant's hands and recording into the documentation.

This time is about 10 minutes in average. Therefore, it is necessary to add another 50 minutes for five calls.

The final (net) time for the hygienic phase of one patient is 132 minutes in average without endodontic treatment and extractions and 216 minutes including endodontic treatment and extractions.

If we evaluate patients as per the type, the average time for treating the common patient in the hygienic phase is 98'/130', for cario-active patient the needed time is 108'/198', for periodontal patient 154'/226', and for cario-periodontal patient 164'/310'.

If we compare our results to previous reports, most of the authors have similar results. Drizhal reports the average time for motivation and instruction 25 minutes, while the time for scaling was 36 minutes. He only measured the net working time in the patient's mouth.

Dini and Castellanos, quoted by Beres, indicate their work time to be 1,783 hours for instruction for 528 patients, i.e. in average 4 hours for a patient and 2,531 hours for scaling, i.e. about 5 hours for a patient. Beres presents his results in relation to financial costs for treatment of a patient by a dentist or dental hygienist. The time for the hygienic phase of

these patients working in a sugar factory and distillery in Brazil was greatly different when compared to other reports.

Douglass, Gammon et al (4) recommend for the hygienic phase for a patient with gingivitis 90 minutes, for a patient with periodontitis 105 minutes. For extractions of incurable teeth during the hygienic phase they recommend 11 minutes.

Rateitschak and Wolf (30) recommend for deep scaling 3-10 minutes per tooth.

Vorwerk (35) recommends an average time consumption of 165-225 minutes for the hygienic phase and 195-270 minutes with recall.

According to the WHO recommendations time consumption for the hygienic phase shall depend on the periodontal condition: 210 – 240 minutes for gingivitis, 280 minutes for periodontitis.

Several authors compare the time for scaling using ultrasound and hand instruments. It is possible to reduce the time for scaling by using of ultrasound. The saved time is important for motivation and instruction. These works also compare the quality of treatment results when using hand instruments and ultrasound for scaling.

Moritz et al stress the significance of quicker and more perfect treatment when using laser in combination with scaling. By using of laser there was quicker decrease in amount of bacteria.

Drisko (5) compares the effect of manual and mechanical scaling. Scaling by ultrasound brings a significant improvement in clinical and laboratory outcomes. However, the final result is similar to manual scaling.

Petersilka and Flemming (29) recommend removal of a significant amount of calculus in a short period of time by means of the most effective instruments during the hygienic phase. They recommend sound and ultrasound scalers. The work itself is more pleasant and less tiresome for the patient.

The duration of the hygienic phase depends on a diagnostic method and adequate treatment procedure (25). The important role is played by instruments used, and drugs indicated according to the type of bacteria, etc.

Regarding individual oral hygiene we stress the importance of cleaning the interdental space, as this is the place where most of the oral cavity diseases begin and take place. As a more effective aid in treating inflammation, the

interdental brush has proven efficiency. Christou et al (8), Simunek et al (34), and Jenca (2002) reported similar results in this respect. Therefore we started each instruction with this aid. This also has a great significance from the psychological point of view. The patients do not feel that they do not know how to use a toothbrush, but they receive a new aid, which "they were entitled not to know".

A perfect cleaning of tooth surfaces at scaling is compulsory for a successful treatment effect.

## CONCLUSION

The authors determined the time consumption for the hygienic phase and one recall in a group of 256 patients. After motivation and instruction all patients underwent scaling, adjustment of filled surfaces, teeth polishing, and fluoridation during three to six calls.

The condition of the oral hygiene was evaluated continuously by the PBI-index. Cario-activity was evaluated using the KPE-index + X-ray. Periodontal status was assessed by measuring the depth of periodontal pockets + X-ray examination. The duration of the treatment was not influenced by any chemical agents, no drugs were administered.

After assigning patients to the correspondent groups we noticed that replacing fillings would also affect time consumption during the hygienic phase.

Time consumption of the hygienic phase (in average – without recall) is significant:

1. motivation (including evaluation of X-ray + PBI) and instruction 37 minutes (23' + 14'),
2. removal of supragingival deposits 45 minutes,
3. removal of subgingival deposits 78 minutes,
4. adjustment of fillings, polishing, and fluoridation 37 minutes,
5. endodontic treatment 70 minutes,
6. extraction of incurable teeth 20 minutes.

Introduction of the hygienic phase is very rare in our country. Our results regarding time consumption for such treatment are very similar to many previous reports. Time for mechanical scaling may be decreased by the use of highly efficient instruments – by using of subgingival ultrasound drills. Inflammation can be reduced by various chemical agents (chlorhexidine, antibiotics). During the hygienic phase we used instruments and devices commonly used in dentist's offices. We have not increased the costs of the hygienic phase by recommending any chemical agents. □

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