

CARIES SCORES IN HUNGARIAN ADOLESCENTS WEARING THE ALEXANDER FIXED ORTHODONTIC APPLIANCE

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REZUMAT

Acest studiu este o investigație asupra sănătății orale la 1179 de adolescenți cu aparat dentar Alexander, cu vârsta medie de 14,3 ani (DS 1,8 ani). Dintre subiecții examinați, 46% nu au prezentat carii, restul de 54% au avut următoarea distribuție: DMF = 1: 16%, DMF = 2: 14%, DMF = 3: 7% și DMF > 3: 17%. Rezultatele nu demonstrează o igienă orală „deficitară” a copiilor ce poartă aparat dentar Alexander, ci dimpotrivă, sugerează că există un nivel acceptabil de igienă orală cât și cunoștințe de educație dentară la adolescenții tratați pentru malocluzii, acestea fiind un important factor de risc pentru apariția plăcii dentare, preambulul dezvoltării cariilor.

Cuvinte cheie: aparat dentar, igienă orală, adolescent

ABSTRACT

This survey represents an investigation regarding the oral health in 1179 adolescents, wearing the Alexander fixed braces, aged 14.3 years (\pm 1.8 years SD). Out of all examined subjects 46% were recorded as caries-free and the remaining 54% showed the following distribution pattern: DMF = 1 was 16%, DMF = 2 was 14%, DMF = 3 was 7% and DMF > 3 was 17%. The results do not support a judgment of “poor level” of oral hygiene in children wearing the Alexander appliance, on the contrary, the outcome suggests an acceptable level of oral hygiene, as well as an educated dental attitude in adolescents treated for malocclusions, which are mostly regarded as a risk factor for caries inductive dental plaque formation.

Key Words: fixed braces, oral hygiene, adolescent

INTRODUCTION

The caries prevalence in Hungary amongst 12 year old children was, according to the DMF index, 4.29 in 1991.¹ This DMF score decreased to 3.80 in 1996 in the same age group, while the incidence of caries-free children has increased from 10.4% to 15.5%.^{2,3} According to previous studies, the percentage

of caries-free adolescents aged between 14-16 years has been found to be 5.1%, whereby the average DMF score was found to be 7.0.^{4,5} A longitudinal follow-up study amongst 15-18 year olds in Budapest between 1997 and 1999 showed an increase in the DMF score from 6.9 to 9.2 in the 15 year age group, and an increase from 7.5 to 9.0 in the 16 year age group.⁵ According to a related study, no caries-free individuals were found in the 16 and 18 year age groups.⁶ The findings of a recent epidemiological survey in Hungary showed an average DMF score of 7.64 and a 6.1% incidence of caries-free individuals in the 18 year age group.⁷ The present data suggests a significant increase in caries incidence from the 12 year old children to the adolescent age group. However, fixed multibracket orthodontics is more commonly used in the adolescent ages than in childhood in a children's hospital. The Alexander appliance frequently used at the Heim Pál

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Received for publication: Sep. 18, 2006. Revised: Dec. 19, 2006.

Children's Hospital has been criticised because of presumed cleaning difficulties supposedly resulting from the rotational wing components of the bracket.⁸ The objective of the present study was to evaluate the real caries occurrence in individuals provided with the Alexander appliance.

MATERIAL AND METHODS

The DMF-T scores were recorded in a cross-sectional manner of 1179 individuals aged 14.3 (+1.8) years whose treatment with the Alexander appliance was supported by the state insurance scheme at the Heim Pál children's hospital. Of the examined individuals comprising 58% girls and 42% boys, 80% were living in Budapest and the rest were from the countryside.

Following the stable positioning of the patient in the dental chair all teeth were dried and the visual examination was carried out by means of using artificial light, dental mirror and occasional light probing. Teeth with fissure sealants were considered to be sound. Prior to the commencement of orthodontic treatment all examined individuals found with dental caries were referred to the paediatric dentist for appropriate dental restorations. During the course of treatment all individuals were monitored for new caries lesions. This practically means that the decayed teeth were restored, thus the D-T (decayed teeth) value was minimized. As far as M-T (missing teeth) are concerned, it has a high validity because the orthodontic radiographic diagnostics and dental history makes it possible to exclude the following: 1) teeth removed for orthodontic reasons and traumatologic purposes, 2) impacted - and retained - and misplaced teeth, and 3) developmental absence of teeth germs. The number of decayed teeth was not significant but the low number of missing teeth had a high validity. Therefore, the oral DMF-T index was regarded as a closer caries indicator and not represented with the FS-T (filled and sound teeth) index which was discussed recently in detail.⁹ The investigation was carried out by two examiners, of which one performed the clinical and the other the radiographic evaluation.

RESULTS

The findings of this investigation revealed that out of the 1179 adolescent examined, 46% were found to be caries-free. The total DMFT value was calculated to be 1.50. Furthermore, the following distribution pattern amongst those examined was found: 16%

equated to DMF=1, 14% equated to DMF = 2, 7% equated to DMF = 3, and 17% equated to a DMF score of more than 3. The total caries prevalence was found to be 54%. (Fig. 1)

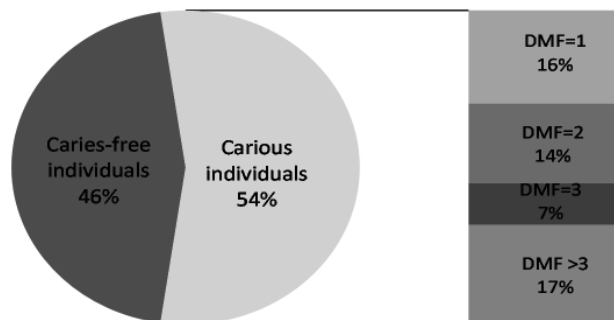


Figure 1. The DMFT distribution pattern amongst adolescents treated with the Alexander fixed orthodontic appliance (n=1179).

The caries distribution pattern amongst those adolescents treated with the Alexander fixed orthodontic appliance are presented in terms of DMFT in Figure 2. No selection of data is shown of those adolescents exhibiting a DMFT score of more than three.

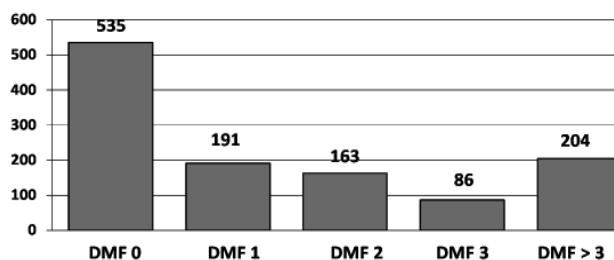


Figure 2. The caries distribution pattern amongst adolescents treated with the Alexander fixed orthodontic appliance in terms of the DMF index (n=1179).

DISCUSSION AND CONCLUSIONS

Contrary to the common assumption that orthodontic appliances are considered to be plaque accumulative and therefore, indirectly promoting the formation of caries, the outcome of the present investigation suggests that as 46% of the adolescents were caries-free, a change in paradigm can be observed. Furthermore, the findings suggest that individuals who have their malocclusions (which are also regarded as caries risk factor themselves) treated with orthodontic appliances, develop as a result of enhanced motivation an increased dental awareness, positive attitude and skills towards efficient oral hygiene measures.¹⁰

There appears to be a need to challenge the present attitude towards dental caries in Hungary as the wearing of orthodontic appliances amongst adolescents showed

that 46% of these individuals actually remain caries-free. In contrast to this, a recent WHO (World Health Organization) survey showed a prevalence of 6.1% of caries-free individuals in the 18 year age group population.⁷ Those individuals who were to be treated orthodontically must already have had a low caries prevalence prior to their commencement of treatment. Contrary to the results of a recent cross-sectional Hungarian survey which recorded the national average DMFT as 7.64, the examined individuals in this investigation, who sought orthodontic treatment, already had a good oral hygiene as the average DMFT in this study was recorded to be 1.50.¹¹ The former axiom that orthodontic treatment might have a positive effect on caries prevalence may need to be revised due to the findings above which showed that those individuals who request orthodontic treatment presumably have a positive oral behaviour including oral hygiene from the time prior to treatment.^{11,12} Therefore, the Alexander fixed orthodontic appliance, just like other orthodontic appliances, does not seem to be associated with an enhanced risk for caries formation.^{11,12}

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