

THE PREVALENCE OF CARIES IN FIRST PERMANENT MOLAR IN A GROUP OF SCHOOL CHILDREN AGED 6 TO 7 YEARS IN PITEȘTI

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The aim of these study was to highlight the clinical status of first permanent molar in a school community of Pitești. Children from a secondary school, aged between 6 and 7 years were included. Method: (1) Cross-sectional study (2) Children were examined in the school dental office (3) It has been analyzed: the status of the eruption and the clinical status of the first permanent molars at the moment of the examination. (4) It has been calculated records of: prevalence index (I_p), frequency of caries free subjects, DMFT and DMFS indices lot. Results: (1) 102 school children were examined. (2) From total first permanent molars examined in girls: 75.95% are erupted molars. (3) From total first permanent molars examined in boys: 72.76% are erupted molars. (4) The values shown are: $I_p = 30.43\%$ (girls); $I_p = 48.21\%$ (boys); (5) Frequency of caries free subjects to the level of entire lot: 58.82%; (6) DMFT - girls: 0.60; DMFT - boys: 0.78; DMFS - girls: 0.69; DMFS - boys: 0.89. Conclusions: At the evaluated age group, two thirds of the first permanent molars are erupted. Caries on the first permanent molars were found at almost half of the children, especially on the occlusal surfaces. Preventive local methods are mandatory.

Keywords: caries, first permanent molar

INTRODUCTION

Although efforts are made for prevention, the dental caries continue to be frequent disorders, that is why it is necessary to apply methods for its prevention and to intervene even from the early stage. The frequency of caries vary considerably depending on the tooth, its morphology, its eruption stage and the position on the dental arcade, which can advantage and disadvantage the control of bacterial plaque^{1,2}.

A special care was given and is given to the caries damage by the first permanent molar, due to the importance this tooth has in the good functionality of the dental-maxillary anatomy³⁻⁶.

Around the age of 6 years old, the child's teeth start to change from temporary teeth to permanent teeth. A 6 year old child's molar is the first permanent tooth that appears on the dental arcade, erupting distally from the second temporary molar. This molar, also called the first permanent molar (FPM), is named by Kunzel (1988), quoted³, as <the early child of infantile dentistry>.

The first permanent molars have an important role in establishing the occlusion. Also, they have a role in delimiting the space where the other permanent teeth will erupt, and their premature loss can disrupt the eruption and the migration of the other definitive teeth. Most of the times, FPMs are mistaken by the parents with the temporary molars, due to the position they have on the arcade and because they erupt without replacing any

temporary tooth. This may be a reason why their hygiene is mostly neglected, and caries appear in the early stages of their appearance on the dental arcade³.

The increased risk of caries of FPMs, the deficient oral hygiene of children, as well as the little knowledge of parents referring to the correct cleaning methods can result in the early loss of molar 1 permanent from arcade^{1,6}.

It is important to know the frequency and seriousness of caries affecting FPMs, in order to establish programmes to prevent the decay of these teeth. The frequency of caries affections is expressed by calculating the prevalence index (I_p) and the DMFT index, resulted from adding the total number of decayed teeth, lost by decaying processes and of the obstructed teeth. The seriousness of caries affections is emphasized by the DMFS index. This index is calculated by adding the total number of decayed tooth surfaces, lost by decaying processes and of the obstructed tooth surfaces.

Following some studies performed in Romania, it was determined that the average DMFT index at six-year old children is higher than those of the children from the developed countries⁷.

Starting from the idea that the promotion of the oral health and of the preventive practices can be performed at the moment when we will know the needs and the oral-dental diseases we confront with, which can only be performed by elaborate and updated studies⁷, our purpose is to assess the degree of how the caries affect FPMs.

In Romania there are a series of studies about the caries on FPMs. Epidemiological studies were undertaken in schools (general population) and specialized clinics (children attending dental care)^{1, 4, 7 - 10}. These studies outlined the need of establishing some prevention programmes at least at community level and, first of all, the need of insuring the organizational framework for their implementation. Neither the importance of the prevention programmes should not be overlooked, and from this point of view, the knowledge of the odontal status of FPM allows the planning, ranking and determination of the priorities of the dental assistance, in order to prevent the damage of FPMs or the diagnosis in the reversible, early stages⁵.

Because there were not reported the studies on the odontal health state of FPMs, in school children from Arges county, **the purpose** of the study was to determine the prevalence of caries on FPMs on a group of students with the age of 6 and 7 years old, in order to emphasize the clinical status of this tooth ever since its eruption on the arcade.

MATERIAL AND METHODS

A cross-sectional study was performed on a group of children, students of a school from Pitesti City. The educational institution was chosen because it had a dentist's office, which provides optimum conditions to examine the students. Students with the age of 6 and 7 years old were included in the study, who cooperated and whose parents agreed to include the children in the study. Non-cooperating children and children whose parents did not agree to include them in the study were excluded from the study. The clinical exam of the children was performed by a single dentist. The status of the eruption and the clinical status of the first permanent molars was analysed at the moment of the examination.

The presence of the tooth caries was appreciated by examination and by palpation. No radiological examination was performed.

The data observed during the examination were recorded in individual sheets, then centralized in order to be processed. Based on these data, we calculated the caries prevalence index, the frequency of caries free subjects, the caries experience expressed by DMFT and DMFS indices for the entire study group and separately for both sexes. Statistical analysis was performed in Microsoft Excel for Mac 2016.

RESULTS AND DISCUSSIONS

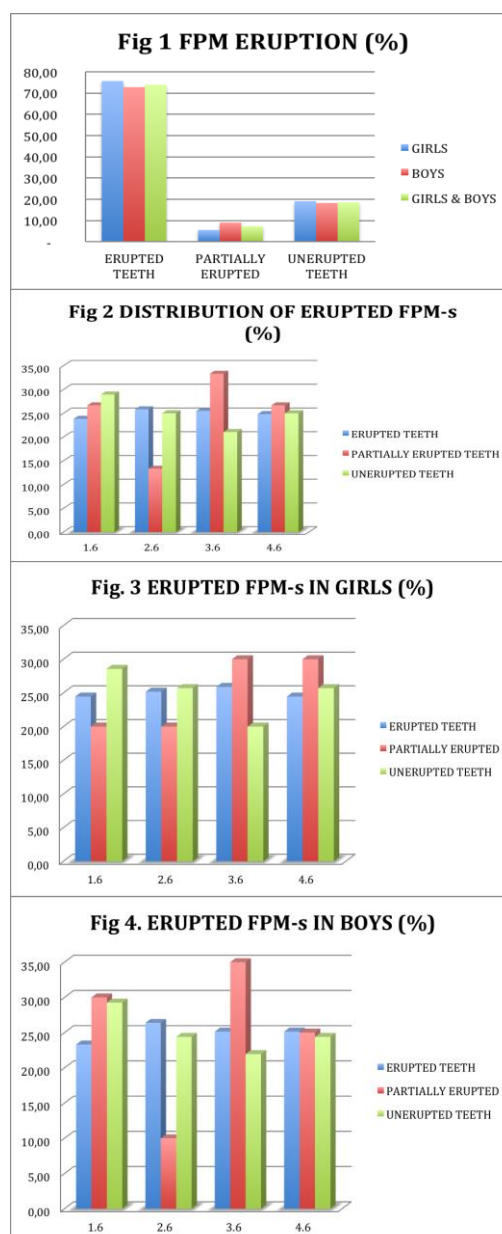
102 students (56 boys, 46 girls), with ages between 6 years old and 7 years and 11 months old (mean age = 7 years old), were examined. The mean age for boys was 6 years and 11 months old and for girls was 7 years old and 1 month.

a) **The eruption status of the first permanent molar** is presented in figure 1. At least one first permanent molar was erupted at all children.

Of the total of 408 6-year old molars, which should have been present on the dental arcades at the end of the eruption process, 302 were completely erupted (74.02%) at the moment of the examination, 30 were partially erupted (7.35%) and 76 have not been erupted yet (18.62%).

With regard to the distribution on sexes of the eruption of the first permanent molar, 163 FPM (72.77%) were fully erupted and 20 (8.93%) were partially erupted in boys, while 139 (75.54%) were fully erupted and 10 (5.43%) were partially erupted in girls.

Calculated at the level of the entire group, 2.6 erupted the most (25.8%). Reported to the two sexes, 3.6 erupted mostly (25.9%) in girls, and 2.6 (26.3%) in boys. (Figure 2 - Figure 4)



b) The index of caries prevalence on FPM (I_{P-FPM}) and the caries experience indices (DMFT and DMFS)

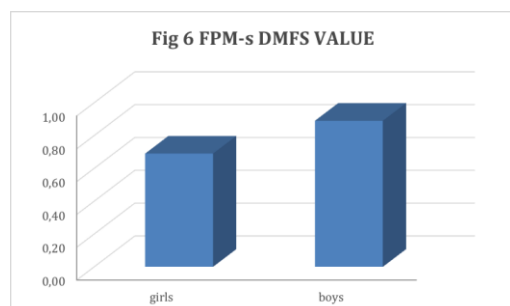
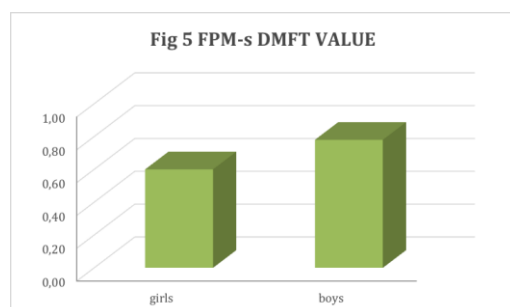
I_{P-FPM} of the entire group of students examined was 40.19%. In boys, this index was 48.21% and in girls 30.43%.

Frequency of caries free subjects to the level of entire sample 58.82%. Caries experience indexes are presented in Table 1.

| | Girls | Boys | All sample |
|------|-------|------|------------|
| DMFT | 0.60 | 0.78 | 0.70 |
| DMFS | 0.69 | 0.89 | 0.81 |

Table 1. FPM-s caries experience

DMFT/DMFS indices were higher in boys (Fig.5, Fig.6).



c) Distribution and topography of caries are represented in figures 7, 8 and 9.

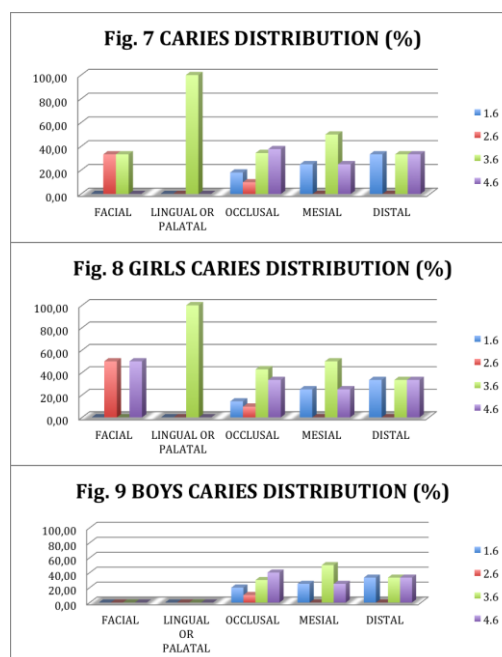
At the level of the examined FPM, there was a total of 78 caries, which represents 25.82% of the total of erupted teeth.

The caries distribution at the level of the entire group was as follows: 77.22% occlusal caries, 10.13% mesial caries, 7.59% distal caries, 3.80% vestibular caries, 1.27% oral caries.

Reported at the two sexes, there were 60.25% caries in boys and 39.75% caries in girls.

Of the 47 caries in boys, there were: 85.11% occlusal caries, 8.51% mesial caries and 6.38% distal caries. There were no caries on the vestibular and oral surfaces.

In girls, we found a total of 31 caries, divided as follows: 67.74% occlusal caries, 6.45% vestibular caries, 3.23% oral caries, 12.90% mesial caries and 9.68% distal caries.



With regard to the eruption status of FPMs, the study's results showed a higher percentage of total erupted teeth in girls. Also, it was determined that the number of erupted lower molars was higher than the number of upper molars in both sexes. These findings are compliant with the results reported by Romo - Pinales MR. and col., according to which the early eruption of permanent teeth is higher in girls than in boys, lower teeth erupt faster than the upper teeth and the first permanent tooth that appears is the lower molar¹¹.

The results regarding the FPM prevalence index were higher than those indicated by studies at the same age groups in different areas of our country, 27.82% - Fetești and 39.13%-Pătărlagele⁴. Lower values were indicated for children aged 6-8 years from Bucharest [I_{P-FPM} = 53.91%⁶. Also, the values we obtained are lower than those obtained by Xue Y. and col. on a group of Chinese children, with the age between 7 and 9 years old (I_p =47.49%; DMFT=1.30).¹²

With regard to the lower values we obtained, we must take into consideration the fact that the age of the children in our group was lower.

DMFT and DMFS indices were higher than those indicated at the same age group in Fetești (0.46 respectively 0.60)⁵. In other regions, for children aged 6-8 years lower values were obtained: Slatina (0.88 respectively 1.07), Pătărlagele (1.26 respectively 1.4)⁴ and at the Department of Pedodontics, Faculty of Dentistry, „Carol Davila” University in Bucharest⁶.

Analysing the distribution of the caries processes, these were more numerous on the occlusal surface of lower molars, both in girls and in boys, and the least caries were found on the vestibular surfaces in the group of girls.

Older^{13, 14} and recent^{5, 6} studies indicated similar results regarding the predominance of occlusal caries (first

affected teeth surfaces). Berescu et al. (2012) indicated the high occurrence of occlusal caries at the first permanent molars shortly after eruption⁹.

In this study the lower first permanent molars were more affected than the upper ones, as indicated previously by Fleacu (46.5% affected lower first permanent molars and only 36% upper first permanent molars)⁸.

CONCLUSIONS

Two thirds of the FPM were erupted at the moment of the examination, both in girls and in boys. Almost half of the children examined had caries on FPMs recently, especially the occlusal surfaces being affected.

Taking into account the increased vulnerability to caries, it is recommended to seal the grooves and pits for the molars predisposed to caries and the enlarged sealing as alternate method in the case of incipient caries processes.

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