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Evaluation of stomatological needs of 8-year-old children connected with premature loss of deciduous teeth

One of the prerequisites of the normally developed masticatory system is the presence of full alveolar arch with teeth free of dental decay. Its discontinuation during development may result in disorders of the masticatory system and its lowered effectiveness. Premature loss of deciduous teeth is defined as the period longer than 6 months prior to the physiological exchange when dislocation of neighbouring teeth may occur and the buds of permanent teeth are still deep in the bone of alveolar sockets being premature to erupt. From the point of view of orthodontic prophylaxis it is essential to save the gap caused by premature loss of deciduous teeth if permanent teeth cannot grow in within 6 months (1, 4, 5, 7, 8, 9).

Premature loss of deciduous teeth can result in loss of the alveolar process bone and vertical support from adjacent teeth as well as shifting, drifting or elongation of teeth deprived of their counterparts (3).

Milk teeth keep space for permanent dentition and their premature loss is an indication to apply space retainers, partial or complete dentures (2, 5, 6, 7, 8).

Altered oral anatomy as a result of premature loss of deciduous teeth changes muscular physiology to create new balance, which habituates new improper physiological patterns and can lead to the formation of facio-occlusal defects. The role of prosthetic devices is to prevent developmental disorders of the masticatory system since they prevent gap-neighbouring teeth from drifting, maintain normal occlusion height and biting conditions, improve mastication and articulation of speech as well as prevent para-functions.

The purpose of the study is to evaluate primary and secondary dentition in 8--year-old children attending schools in Lublin that do not provide continuous dental care, and to assess therapeutic needs concerning the provision of prosthetic--orthodontic devices in case of premature loss of primary teeth.

MATERIAL AND METHODS

The study covered 106 eight-year-old children attending different schools in Lublin that do not provide dental care. The following parameters were assessed: frequency of decay in deciduous and permanent teeth; DEF value (Decay, Extractions, Fillings) for permanent teeth, its components D (Decay), E (Extractions), and F (Fillings); def value (decay, extractions, fillings) for deciduous teeth and its components d (decay), e (extractions), f (fillings) and index of treatment for deciduous and permanent teeth.

RESULTS AND DISCUSSION

The results are presented in Tables 1–4. The frequency of dental caries in deciduous teeth, def value and its components d, e, f and treatment index are presented in Table 1. The results found 91.51% frequency of decay in milk teeth among 8-year-olds; def value was 5.57, d = 4.93, e = 0.25, f = 0.40; treatment index was 0.07, which expresses low effectiveness of treatment. Table 2 presents the percentage of children requiring orthodontic treatment and prosthetic provisions as a result of premature loss of milk teeth. The results found that 4.47% children examined had gap-neighbouring teeth drifting as a result of premature loss of milk teeth. No drift was observed in 9.43% cases. The study also found a big number of children requiring orthodontic treatment due to other factors than premature loss of milk teeth. It has to be emphasized that none of the children examined had prosthetic devices and only three children were on orthodontic treatment for bite defects, independent of premature loss of milk teeth.

Table 1. Decay frequency, def value and treatment index

Decay frequency	def	d	e	f	Treatment index
91.51%	5.57	4.93	0.25	0.40	0.07

Table 2. Percentage of children requiring orthodontic treatment and prosthetic provision

Children with displaced teeth neighbouring the gap left by deciduous teeth lost prematurely %	Children with no displacement of teeth neighbouring the gap left by deciduous teeth lost prematurely %	Need for orthodontic treatment disregarding premature loss of deciduous teeth %
4.72	9.43	18.87

Table 3 presents the percentage of children with prematurely lost teeth detected (only actually missing teeth were considered). It also lists teeth to be extracted as a result of pulp decay that very often causes inflammation of periapical tissues. The study found premature loss of deciduous teeth in 14.15% children; fifteen children had 26 teeth lost. Prematurely lost teeth included milk molars. Forty-five children had to have their milk teeth extracted due to the extent of damage by decay, infrequently due to chronic inflammation of periapical tissues. Consequently, the extraction of those teeth would increase the need for prosthetic devices.

Table 3. Percentage of children with premature loss of teeth detected

No of children examined	Selected for extraction		No of deciduous teeth lost	Children with premature loss of deciduous teeth	
	Teeth	Children		№	%
106	96	45	26	15	14.15

Table 4 presents the frequency of dental decay in permanent teeth, DEF value and its components D, E and F and treatment index. The results found DEF value was 0.72, D = 0.68, E = 0.0, F = 0.04. The treatment index was 0.05 which expresses low effectiveness of treatment.

Table 4. Decay frequency, DEF value and treatment index

Decay frequency	DEF	D	E	F	Treatment index
29.25%	0.72	0.68	0.0	0.04	0.05

CONCLUSIONS

1. Decay rate is high.
2. Premature loss of deciduous teeth indicates the need for immediate prosthetic provisions, e.g. space retainers or partial dentures fabricated for children.
3. Discontinuity of the alveolar arch creates conditions that favour the formation of facio-occlusal defects as a result of adjacent teeth drifting towards unsaved gap left by deciduous teeth extracted prematurely.

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SUMMARY

The study covered 106 eight-year-old children attending different schools in Lublin that do not provide dental care. The study evaluated decay frequency, DEF value and its components D, E, F, def value and its components d, e, f as well as treatment index for deciduous and permanent teeth. Additionally, it assessed the needs for orthodontic and prosthetic provisions connected with premature loss of deciduous teeth. The study found low treatment index, especially for deciduous teeth. Premature loss of deciduous teeth is an indication for prosthetic provision in the form of space retainers or partial dentures. Without prompt treatment different acquired facio-occlusal defects may develop.

Ocena stomatologicznych potrzeb leczniczych związanych z przedwczesną utratą zębów mlecznych u dzieci 8-letnich

Badaniem objęto 106 dzieci w wieku 8 lat, uczęszczających do szkół lubelskich, bez stałej opieki stomatologicznej. Określono frekwencję próchnicy, liczbę PUW oraz składowe: P, U, W, liczbę puw oraz jej składowe: p, u, w oraz wskaźnik leczenia dla uzębienia mlecznego i stałego. Oceniono również potrzeby w zakresie zabezpieczenia ortodontycznego oraz protetycznego w związku z przedwczesną utratą zębów mlecznych. W wyniku przeprowadzonych badań zaobserwowano niski wskaźnik leczenia próchnicy, szczególnie dotyczący uzębienia mlecznego. Stwierdzono, że przedwczesna utrata uzębienia mlecznego jest wskazaniem do zabezpieczenia protetycznego w postaci utrzymywaczy przestrzeni czy też protez częściowych osiadających. Natomiast niepodjęcie leczenia w porę może prowadzić do powstania nabytych wad twarzowo-zgryzowych.