Hypodontia, hyperodontia, and double formation of primary teeth in Iceland

An epidemiological study

Thórdur Eydal Magnússon
Department of Orthodontics, Faculty of Odontology, University of Iceland, Reykjavik, Iceland

Magnússon TE. Hypodontia, hyperodontia, and double formation of primary teeth in Iceland. An epidemiological study. Acta Odontol Scand 1984;42:137–139. Oslo. ISSN 0001–6357.

The aim of this study was to determine the prevalence of hypodontia, hyperodontia, and double formation of primary teeth in Icelandic childern in the dental stage DS 02 (primary dentition complete). The study group comprised 927 children (498 boys and 429 girls). This was about 9% of all children aged 0–83 months in Reykjavik at the time of the registration of these anomalies, during the winter of 1978–1979. The children included those presenting for regular examinations in two health centers, children from three kindergartens, and seven pre-school classes from two schools in Reykjavik. Of these children 61.9% were selected for this study as they proved to be in dental stage DS 02 (primary teeth fully erupted). The prevalences were hypodontia, 0.5%; hyperodontia, 0.5%; and double formation, 0.7%. Comparison was made with earlier results from Iceland and with results from several other nations. □ *Epidemiology; form; human; number; primary teeth*

Thórdur Eydal Magnússon, Department of Orthodontics, Faculty of Odontology, University of Iceland, Reykjavik, Iceland

Knowledge of the prevalence of malocclusion in relation to the development of the dentition in a population is not only of relevance to health authorities and dentists in planning adequate dental services for the population but is also of interest to anthropologists and others concerned with the study and comparison of different ethnic groups. Only after such information on prevalance of malocclusion has been acquired can a systematic program of child dental care be organized. This should comprise diagnosis, control, prevention, and treatment of malocclusion during development of the bite.

I have studied the prevalance of hypodontia and malformations of permanent teeth during 1972–1973 in a population of school children in Iceland (1) and then examined the material as a part of 'a method for epidemiological registration of malocclusion' in accordance with Björk et al. (2).

In Iceland the prevalence of hypodontia, hyperodontia, and double formation of the teeth has been studied earlier in pre-school children from 2–6 years of age (3) but not exclusively in children with the deciduous dentition fully erupted.

The purpose of this study, therefore, was to determine the prevalence of hypodontia, hyperodontia, and double formation of the primary teeth, confined to dental stage DS 02—that is, the fully erupted deciduous dentition.

Materials and methods

The present study forms a part of an epidemiological registration of malocclusion of the primary dentition, in accordance with the method of Björk et al. (2), from 20 October 1978 to 15 May 1979.

The study group comprised a cross-sectional sample of 927 Reykjavik children (498 boys and 429 girls) aged 0–83 months. This constituted about 9% of the total pre-school population of these ages in the city at the time of the registration. They comprised the total number in these age groups attending two health centers, three kindergartens, and seven pre-school classes from two schools in Reykjavik on the randomly selected days of

the registration. Of these children, 572 (61.9%)—314 boys (33.8%) and 258 girls (27.8%)—were selected for this study, being in the dental stage DS 02. None of them proved to be of a different ethnic group or to have congenital deformities other than the ones that are the aim of this study.

Each child was examined clinically by the author, using a mouth mirror and a special measuring instrument (2). Findings were recorded in a numerical code on special forms at the time of the registration. The data for each individual were then transferred to punched cards. Computation was done at the NEUCC (Northern Europe Computing Centre), Denmark, in accordance with programs by Helm at the Institute of Community Dentistry Dental College, Copenhagen.

Only 22 children in DS 02 (4.2%) had had premature loss of a total of 30 teeth, of which possible cases of hypodontia were verified by consulting the children's dentists and interviewing their parents. The hypodontia could be verified through dental radiographs and patient's records in all of the cases.

That dental radiographs were not taken of the total group should not lead to methodological error either of hypodontia or of double formation of the deciduous dentition but could theoretically leave unerupted supernumerary teeth undiscovered. Unerupted supernumerary primary teeth in a complete primary dentition do occur infrequently in otherwise normal children (4).

Socioeconomic and other aspects of this group have previously been reported (5).

Results

Hypodontia, hyperodontia, and double formation (Table 1) were all found in low frequency, in a total of 10 children, making the total prevalence of formation anomalies 1.7% (1.3% for boys and 2.3% for girls). Each of the anomalies showed frequencies below 1%.

Hypodontia was found in one boy (0.3%) and two girls (0.8%), giving a total of 0.5% for both sexes combined. The missing teeth were in all three cases lateral incisors. In the boy a maxillary right deciduous lateral was missing; however, the girls were missing teeth from the mandible—in one of them the right lateral and in the other both laterals.

Table 1. Frequency of hypodontia, hyperodontia, and double formation

Anomaly	Boys			Girls		
	N*	PCT†	SE‡	N	PCT	SE
Hypodontia	1	0.3	0.3	2	0.8	0.6
Hyperodontia	1	0.3	0.3	2	0.8	0.6
Double formation	2	0.6	0.4	2	0.8	0.6

* N = absolute frequency of children with the anomaly.
† PCT = percentage frequency.
‡ SE = standard error of PCT.

Hyperodontia was found in the same frequency: 0.3% for boys and 0.8% for girls, giving a total of 0.5% for both sexes combined. In the hyperdontia cases the boy had hyperodontia of the mandibular right lateral, whereas the girls had hyperodontia in the maxilla; in both of them it was the left lateral, but one of them also had a gemination of the right central. This girl was the only child with more than one of these anomalies.

Double formation was seen in two boys (0.6%) and in two girls (0.8%), giving 0.7% for both sexes combined. The double formation was in all four cases limited to the right side. The boys had fusion of central and lateral in the mandible, but the girls had the double formation of the same teeth in the maxilla. One of the girls and both of the boys had fusion of those teeth. The second girl had a gemination.

Discussion

The Icelandic people are on the whole homogeneous, both from the genetic and from the socioeconomic point of view (5). The results of this study can therefore be regarded as representative of the pre-school children in Reykjavik and in Iceland as a whole.

As can be seen from Table 1, only small frequencies were found for hypodontia, hyperodontia, and double formation (fusion and germination), all below 1%. No malformation except double formations were recorded for both sexes. These frequencies

Table 2. Prevalence (in percentage) of hypodontia, hyperodontia, and double formation of the primary teeth in the Nordic countries

Author	Country	Year	Sample size	Percentages of children with		
				Hypodontia	Hyperodontia	Double formation
Grahnén & Granath (6)	Sweden	1961	1173	0.4	0.3	0.5
Moller, 2–7 years of age (3)	Iceland	1963	609	0.2	0.8	0.2
Ravn (11)	Denmark	1971	4564	0.5	0.6	0.9
Holm & Arvidsson (8)	Sweden	1974	208	0.5	1.4	0.5
Rasmussen & Helm (10)	Denmark	1975	406	0.2	1.7	
Hanusardóttir (7)	Faeroe Isl.	1978	218	0.0		
Järvinen & Lehtinen (9)	Finland	1981	1141	0.9	0.4	0.1
Magnússon (present study)	Iceland	1983	572	0.5	0.5	0.7

are similar to those found in previous studies (3, 6–11, 13). However, these anomalies occur more frequently among different syndromes (12). The girls showed higher frequencies in all of the anomalies found, which is in accordance with former studies of hypodontia but contradictory to most studies of hyperodontia carried out on Nordic material and elsewhere (Table 2) (8–11).

An exception is a study by Moller (3) on Icelandic children, in which he reported prevalence rates for hyperodontia of 1.2% for boys and 0.3% for girls.

The total frequency of formation anomalies of the primary teeth in Iceland, 0.5% for both sexes combined (boys, 0.3% and girls, 0.8%), differs considerably from those for the permanent teeth, for which 7.9% for both sexes combined (6.7% for boys and 8.9% for girls) have been reported (1).

A similar difference between the frequency of formation anomalies between the primary and permanent dentition has been found in other countries (6, 9, 10).

It is especially important that hypodontia, fusion, and gemination in the primary dentition is diagnosed at an early age because it has been shown that patients with hypodontia of the primary dentition nearly always show aplasia of the successors; in addition, one third of them have double formation and other malformations (6). The early diagnosis of these anomalies of the primary dentition will therefore lead to better planning of treatment of hypodontia of the permanent teeth. In most cases, however, no treatment is required in the primary dentition because of a missing deciduous tooth, hyperodontia, or a malformation.

References

1. Magnússon TE. Prevalence of hypodontia and malformations of permanent teeth in Iceland. Community Dent & Oral Epidemiol 1977;5:173–178.
2. Björk A, Krebs Aa, Solow B. A method for epidemiological registration of malocclusion. Acta Odontol Scand 1964;22:27–41.
3. Moller P. Oral health survey of preschool children in Iceland. Acta Odontol Scand 1963;21:47–97.
4. Lüten, JR. The prevalence of supernumerary teeth in primary and mixed dentitions. J Dent Child 1967;34:346–353.
5. Magnússon TE. Emergence of primary teeth and onset of dental stages in Icelandic children. Community Dent & Oral Epidemiol 1982;10:91–97.
6. Grahnén H, Granath L-E. Numerical variations in primary dentition and their correlation with the permanent dentition. Odontol Revy 1961;12:348–357.
7. Hanusardóttir B. Skeivar tenn hjá føroyskum børnum. Fróðskaparrit (Annal Societ Scient Færøensis) 26. bók. Tórshavn 1978.
8. Holm A-K, Arvidsson S. Oral health in preschool Swedish children. Odont Revy 1974;25:81–97.
9. Järvinen S, Lehtinen L. Supernumerary and congenitally missing primary teeth in Finnish children. An epidemiologic study. Acta Odontol Scand 1981;39:83–86.
10. Rasmussen I, Helm S. Forekomsten af tandstillingsfeil i det primære tandsæt. Tandlægebladet 1975;79:383–388.
11. Ravn JJ. Aplasia, supernumerary teeth and fused teeth in the primary dentition. Scand J Dent Res 1971;79:1–6.
12. Pindborg JJ. Pathology of the Dental Hard Tissues. Copenhagen: Munksgaard, 1970.
13. Menczer LF. Anomalies in the primary dentition. J Dent Child 1955;22:57–62.

Received for publication 28 January 1983