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Reasons for the occurrence of incomplete dental arches in students of the Medical University of Lublin

Progressing loss of permanent dentition and occurrence of incomplete dental arches have been counted among the most important oral health problems of humanity. Missing dentition is divided into: congenital deficits (missing tooth buds: hypodontia, oligodontia, anodontia) and acquired deficits, which are the result of untreated dental caries, adverse course of treatment of complicated caries, a consequence of trauma to the facial skeleton, or of surgical intervention within the maxilla or mandible as part of cyst enucleation procedure or removal of a tumour (6, 8–11).

The objective of the study was to assess the prevalence of incomplete dental arches in the population of students of the Medical University in Lublin, Poland, aged 21–25 years, basing on the clinical examination and analysis of panoramic dental radiograms.

MATERIAL AND METHODS

The study included a group of 74 students of the Medical University in Lublin, Poland, aged 21–25 years. Clinical examinations were performed and analyses of 74 patients' dental panoramic radiograms were conducted. The assessment concerned the number and kinds of missing teeth with reference to sex, location in the mouth and cause of dentition loss. The study did not take missing third molars into account.

RESULTS

Table 1. Prevalence of incomplete arches according to the subjects' sex and location in the oral cavity

<table>
<tr><th colspan="2">Dental arch</th><th colspan="2">Women</th><th colspan="2">Men</th><th colspan="2">Total</th><th colspan="2">%</th></tr>
<tr><td colspan="2">Complete dental arches (in maxilla and mandible)</td><td colspan="2">33</td><td colspan="2">9</td><td colspan="2">42</td><td colspan="2">56.76</td></tr>
<tr><td rowspan="3">Incomplete dental arches</td><td>in maxilla and mandible</td><td>5</td><td rowspan="3">26</td><td>1</td><td rowspan="3">6</td><td>6</td><td rowspan="3">32</td><td>8.11</td><td rowspan="3">43.24</td></tr>
<tr><td>in mandible</td><td>13</td><td>2</td><td>15</td><td>20.27</td></tr>
<tr><td>in maxilla</td><td>8</td><td>3</td><td>11</td><td>14.86</td></tr>
<tr><td colspan="2">Total</td><td colspan="2">59</td><td colspan="2">15</td><td colspan="2">74</td><td colspan="2">100</td></tr>
</table>

Seventy-four people were examined, including 59 women (79.73%) and 15 men (20.27%). Table 1 presents the frequency of incomplete dental arches depending on the gender and location of gaps. Two complete dental arches, upper and lower, were found in 42 people (56.76%), includ-

ing 33 women (78.57%) and nine men. Incomplete arches were revealed in 32 people (43.24%), including 26 women (81.25%) and six men (Fig. 1, Fig. 2).

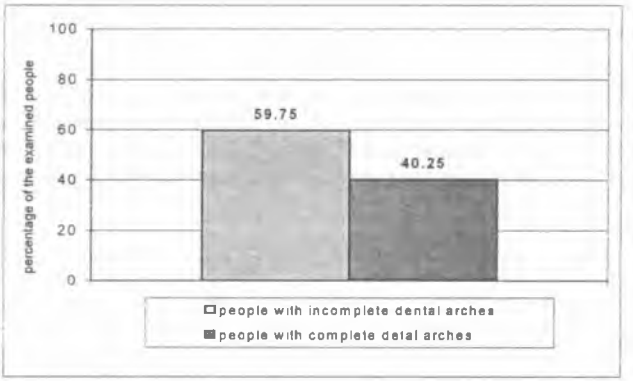

Fig. 1. Prevalence of incomplete dental arches in the studied population

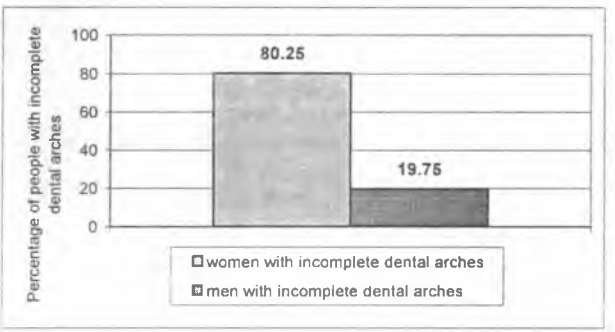

Fig. 2. Prevalence of incomplete dental arches in the studied population according to sex

Table 2. Relationship between the subjects' sex and the number of absent permanent teeth

Sex	Number of missing teeth	%
Women	47	81.03
Men	11	18.97
Total	58	100

Table 3. Prevalence of missing teeth from particular tooth groups

Tooth groups	No. of missing teeth			%
	women	men	total	
Incisors	8	4	12	20.69
Canines	4	-	4	6.90
Premolars	10	5	15	25.86
Molars	25	2	27	46.55
Total	47	11	58	100

Both incomplete arches were discovered in six subjects. One complete dental arch was present in 26 people, including 15 with a complete lower arch and 11 with a complete upper arch. Table 2 shows the relationship between the subjects' sex and the number of missing teeth. In 32 people 58 teeth were found missing altogether, where women had 47 gaps (81.03%), and men lacked 11 teeth (18.97%).

The classification of missing teeth according to tooth groups is shown in Table 3. Missing molar teeth constituted the largest proportion: 27 teeth (46.55%); then incisors: 12 teeth (20.69%), premolars: 15 (25.86%), and four canines (6.90%). The number of gaps per person according to sex is presented in Table 4. One missing tooth was revealed in 15 subjects (20.27%), two teeth in 10 subjects (13.51%), three gaps in five people (6.76%), and four missing teeth were found in two students (2.70%).

Table 4. Number of missing teeth per person with reference to sex

No. of missing teeth per person	Women	Men	Total	%
0	33	9	42	56.76
1	12	3	15	20.27
2	8	2	10	13.51
3	5	-	5	6.76
4	1	1	2	2.70
Total	59	15	74	100

Table 5. Number of missing teeth according to sex and location in the mouth

Location of missing teeth	No. of missing teeth in women	No. of missing teeth in men	Total	%
Maxilla	21	7	28	48.28
Mandible	26	4	30	51.72
Total	47	11	58	100

Frequency of dental gaps was also studied with reference to location; the data are included in Table 5. Twenty-eight missing teeth (48.28%) were found in the maxilla and 30 teeth (51.72%) in the mandible. The results were comparable in both sexes. The causes of dental gaps in the examined students are presented in Table 6 and Figure 3.

Table 6. Reasons for the occurrence of dental gaps according to sex

Sex	Cause /No. of teeth:					
	hypodontia	extraction for orthodontic reasons	teeth retained completely and partially	caries	trauma to teeth	total
Women	13	9	3	22	-	47
Men	1	5	2	1	2	11
Total	14	14	5	23	2	58
%	24.14	24.14	8.62	39.66	3.45	100

The most common cause was tooth extraction due to untreated caries and caries complicated with diseases of the pulp and periapical tissues as in the case of 23 teeth (39.66%) of 16 students. Anodontism was revealed in nine subjects and 14 tooth buds were missing (24.14%). As a conse-

quence of orthodontic indications 14 teeth (24.14%) were extracted in six people. The five impacted teeth (8.62%) were found in four subjects. One student lost two teeth (3.45%) as a result of trauma. The above data are included in Tables 6 and 7 as well as Figures 2 and 3. The study did not take into account any missing third molar teeth.

Table 7. Number of subjects with teeth missing due to particular cause

Sex	Cause / No. of subjects:				
	hypodontia	extraction from orthodontic indications.	teeth retained completely and partially	caries	trauma to teeth
Women	8	4	3	15	-
Men	1	2	1	1	1
Total	9	6	4	16	1

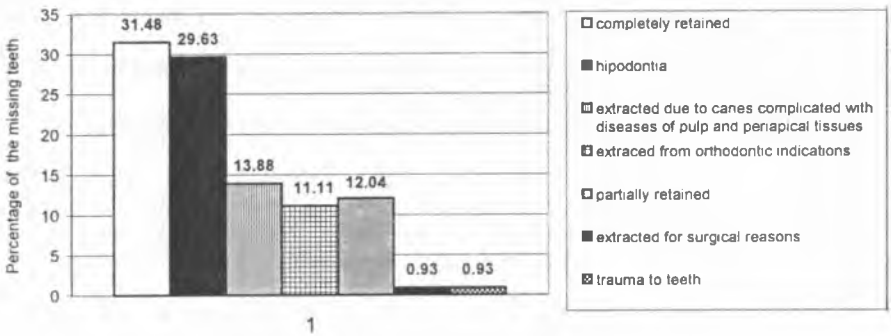

Fig. 3. Most common causes of incomplete arches

DISCUSSION

Kamińska et al. examined a group of 163 people, aged 13 to 63 years. Women constituted 68.70%, and men 31.30%. The authors divided their subjects into six age groups. The most numerous group among women were those aged 21–30 years (42.86%). Men aged 21–30 years accounted for 23.53%. In the studied population 34.35% people had full dentition, i.e. 33.03% of women and 37.25% of men. The above results were not analysed separately for each age group. The group of subjects aged 21–30 years was the most comparable with respect to age with our group of students of the Medical University in Lublin. In the latter population of students aged 21–25 years complete dentition was found in 42 people (56.76%), including 33 women (78.57%) and nine men. The examined population is not a WHO-recommended epidemiological group, and no epidemiological data exist in the literature concerning this particular population. For purposes of comparison studies including the group of 18-year-olds were used (1, 2, 3, 4, 5, 7).

CONCLUSIONS

1. Incomplete dental arches were found in 43.24% of the subjects, more often in women: 81.25%.
2. One missing tooth was the most common finding.
3. Prevalence of missing teeth in both sexes according to location was the same in the maxilla as in the mandible.

4. Among the missing teeth, the most common were teeth extracted due to untreated dental caries, or caries complicated with diseases of the pulp and periapical tissues (39.66%).

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SUMMARY

The authors present a report on the occurrence of incomplete dental arches in the 21–25-year-old population of students of the Medical University in Lublin, Poland, based on a clinical examination and assessment of the subjects' panoramic dental radiograms. Incomplete dental arches were found in 43.24% of the subjects, more often in women: 81.25%. One missing tooth was the most common finding. Frequency of missing teeth in both sexes according to location in the mouth was the same in the maxilla as in the mandible. Among the missing teeth, the most common were teeth extracted due to untreated dental caries, or caries complicated with diseases of the pulp and periapical tissues (39.66%).

Przyczyny występowania niepełnych łuków zębowych u studentów Akademii Medycznej w Lublinie

Autorzy przedstawili problem oraz przyczyny występowania niepełnych łuków zębowych w populacji studentów Akademii Medycznej w Lublinie w wieku 21–25 lat na podstawie badania klinicznego i oceny zdjęć pantomograficznych badanych osób. Niepełne łuki zębowe występowały u 43,21% osób, częściej u kobiet – 81,25%. Najczęściej brakowało jednego zęba. Częstość występowania brakujących zębów u obu płci, w żuchwie i szczęce, była podobna. Najczęściej brakowało zębów usuniętych z powodu nieleczonej próchnicy i próchnicy powikłanej chorobami miazgi i tkanek okołowierzchołkowych (39,66%).