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*Treatment needs of stomatognathic system of 12-year-old
children from the Lublin Region*

Potrzeby lecznicze narządu żucia w populacji dzieci 12-letnich
z makroregionu lubelskiego

A 12-year-old child has full permanent dentition (except for the third molars). Its condition can be used to evaluate the efficiency of a planned treatment and stomatognathic system prophylaxis (7).

The World Health Organisation (WHO) is an organisation that deals with health problems worldwide. A WHO committee of experts in Geneva has prepared a plan of standardisation of methods and techniques used in epidemiological studies, which facilitated evaluation of incidence of the most common stomatognathic system diseases and forecasting treatment needs.

The purpose of this study was to evaluate the treatment needs of stomatognathic system regarding conservative dentistry, occlusion disorders, periodontal tissues, operative dentistry, temporomandibular joint disorders treatment and prosthetics. The obtained results were analysed statistically.

MATERIAL AND METHODS

180 12-year-old children (with 3 months' tolerance margin) were included in the study. The children came from large cities, small towns and villages of the Lublin region. They were 93 girls and 87 boys. For dentition treatment purposes the categories recommended in WHO epidemiological study cards were adopted: Type 1 – caries arrest procedures, Type 2 – one surface filling, Type 3 – two or more surfaces filling, Type 6 – endodontic treatment, Type 7 – tooth extraction.

For parodontium the following treatment needs categories were adopted: TN 1. oral cavity hygiene instruction, TN 2. oral cavity hygiene instruction, scaling and removal of filling overhangs and crowns at the gingival margin, TN 3. oral cavity hygiene instruction, scaling and removal of filling overhangs and crowns at the gingival margin. Complex treatment.

Temporomandibular joint was palpably examined using the pulps of index fingers by pressing the face next to the tragus at the time of mandible adduction and abduction. The following codes were adopted for the existing pathologies: Code 0 – no pathological changes, Code 1 - clicking, Code 2 – self-correcting dislocations, Code 3 – dislocation requiring medical intervention, Code 4 – pain.

RESULTS

Table 1. Number and proportion of patients requiring dentition treatment

Gender/environment	LC	ST	CV	Total
G	21 70.00%	21 63.64%	23 76.67%	65 69.89%
B	24 85.71%	21 72.41%	21 70.00%	66 75.86%
Total	45 77.59%	42 67.74%	44 73.33%	131 72.78%

In Tables 1 and 2 the results of examinations concerning dentition treatment needs were presented.

72.78% of patients required treatment, among which 77.59% came from a large city, 73.33% from a village and 67.74% from a small town. Analysing the obtained results according to gender it was found that 75.86% of boys and 69.89% of girls required conservative treatment of dentition. χ^2 test did not show any statistical significance between the number of patients requiring treatment and environment or gender.

Table 2 shows the categories of dentition treatment needs according to environment and gender. Caries arrest (treatment need type 1) was required in 86.11% of children, among which 98.33% came from a village, 98.82% from a large city and 62.90% from a small town. The differences were statistically significant in χ^2 test ($p < 0.001$). One surface filling (treatment need type 2) was required in 70.00% of the examined population. The highest proportion was found in a large city (74.14%), lower in a village (71.67%) and the lowest in a small town (64.52%). The differences were not statistically significant ($p > 0.05$). The need of two or more tooth surfaces filling (treatment need type 3) constituted 14.44% and was increasing from 8.33% in a village, through 12.90% in a small town to 22.41% in a large city. The differences were not statistically significant ($p > 0.05$).

Endodontic treatment (treatment need type 6) was required in one person from a small town, which constituted 0.56% of the examined population. No statistical significance was found ($p>0.05$). 4.44% of children required teeth extraction (treatment need type 7). The highest proportion was found in children from a small town (6.45%), lower in country children (5.00%) and the lowest in children from a large city (1.73%). The differences were not statistically significant ($p>0.05$).

Table 2. Types of dentition treatment needs according to the environment and gender of the examined children

Type needs	Environment	n	G		B		G+B	
			f	%	f	%	f	%
1	LC	30	30	100.00	27	96.43	57	98.28
	ST	33	10	30.33	29	100.00	39	62.90
	CV	30	29	96.67	30	100.00	59	98.33
	Total	93	69	74.19	86	98.85	155	86.11
2	LC	30	19	63.33	24	85.72	43	74.14
	ST	33	19	57.58	21	72.41	40	64.52
	CV	30	23	76.67	20	66.67	43	71.67
	Total	93	61	65.59	65	74.71	126	70.00
3	LC	30	6	20.00	7	25.00	13	22.41
	ST	33	4	12.12	4	13.79	8	12.90
	CV	30	3	10.00	2	6.67	5	8.33
	Total	93	13	13.98	13	15.00	26	14.44
6	LC	30	0	0	0	0	0	0
	ST	33	0	0	1	3.45	1	1.61
	CV	30	0	0	0	0	0	0
	Total	93	0	0	1	1.15	1	0.56
7	LC	30	0	0	1	3.57	1	1.73
	ST	33	3	9.09	1	3.45	4	6.45
	CV	30	0	0	3	10.00	3	5.00
	Total	93	3	3.23	5	5.75	8	4.44

All categories of treatment needs occurred more frequently in boys than in girls. The need for caries arrest occurred in 98.85% of boys and 74.19% of girls. χ^2 test demonstrated statistical significance ($p<0.001$).

Oral cavity hygiene instruction (TN1) was the most frequent treatment need and was required in 76.67% of children. In different environments the following proportions were observed: 80.65% in a small town, 76.67% in a village and 72.41% in a large city. Overhangs on the teeth (TN2) had to be removed in 23.33% of children. Most of them came from a large city (27.59%), less from a village (23.33%) and the least from a small town (19.35%). The differences were not statistically significant ($p>0.05$). According to the calculations more girls (82.80%) than boys (70.11%) had treatment need TN1. This need reached the highest value in girls from a small town (87.88%) and a village (86.67%) and

Table 3. Treatment needs of periodontal tissues according to the environment

Environment	n	TN1		TN2	
		f	%	f	%
LC	58	42	72.41	16	27.59
ST	62	50	80.65	12	19.35
CV	60	46	76.67	14	23.33
G	93	77	82.80	16	17.20
B	87	61	70.11	26	29.89
Total	180	138	76.67	42	23.33

the lowest in boys from a village (66.67%). TN2 need was observed in 17.20% of girls and 29.89% of boys. Plaque removal was required most frequently in boys from a village (33.33%). Comparable but lower values were found in boys from large and small towns and girls from a large city and the lowest in girls from a village and a large city (13.33% and 12.12% respectively). The differences in number of patients belonging to groups of different treatment needs according to gender were statistically significant; $p=0.0444$.

Table 4 includes data describing the frequency of occurrence of orthodontic defects according to environment and gender of the examined children.

Occlusion defects constituted 68.33% of the examined population. They most frequently occurred in a small town (72.58%), less frequently in a large city (70.69%) and the least frequently in a village (61.67%). On the basis of calculations it was found that orthodontic defects occurred more frequently in boys (71.26%) than in girls (65.59%). The highest proportion was found in boys in a large city (75.00%) and the lowest in girls

Table 4. The frequency of occurrence of orthodontic defects according to the environment and gender

Environment	Gender	n	No orthodontic defect		Present orthodontic defect	
			f	%	f	%
LC	G	30	10	33.33	20	66.67
	B	28	7	25.00	21	75.00
	Total	58	17	29.31	41	70.69
ST	G	33	9	27.27	24	72.73
	B	29	8	27.59	21	72.41
	Total	62	17	27.42	45	72.58
CV	G	30	13	43.33	17	56.67
	B	30	10	33.33	20	66.67
	Total	60	23	38.33	37	61.67
G		93	32	34.41	61	65.59
B		87	25	28.74	62	71.26
Total		180	57	31.67	123	68.33

from a village (56.67%). Incidence of occlusion defects did not reveal statistical relationships with the environment or gender of the examined ($p>0.05$).

Numbers and proportions of children with respective defect types in temporomandibular joints taking into account the environment and gender has been presented in Table 5:

Table 5. The frequency of occurrence of temporomandibular joint defects according to the environment and gender

Environment	n	Code 0		Code 1		Code 2	
		f	%	f	%	f	%
LC	58	49	84.48	8	13.79	1	1.72
ST	62	52	83.87	10	16.13	0	0
CV	60	49	81.67	11	18.33	0	0
G	93	74	79.57	18	19.36	1	1.07
B	87	76	87.36	11	12.64	0	0
Total	180	150	83.33	29	16.11	1	0.56

The largest group consisted of children without any ailments related to temporomandibular joints (83.33% of the examined population). In 16.11% clicking was observed and 0.56% had self-correcting dislocations. The proportions of defects in different environments had similar values and did not demonstrate statistically significant differences ($p>0.05$).

In respect to gender there were no significant differences between the proportions of children with particular defect codes in their joints. Children with healthy temporomandibular joints constituted 79.57% among girls and 87.36% among boys. Clicking in joints was observed in 19.36% of girls and 12.64% of boys. Only one person had self-correcting joint dislocations, which constituted 1.07% of the examined girls. Similarly, no statistically significant differences were found; $p>0.05$.

DISCUSSION

In the examined population 72.78% of children required dentition treatment. The need of one surface filling constituted 70% and the need for filling of two or more surfaces 14.44%. The need of tooth extraction and endodontic treatment were the lowest and constituted 4.44% and 0.56% respectively. All values of treatment needs were higher in boys than in girls.

According to epidemiological data from Jańczuk (1995) in a group of 12-year-old children as many as 90.7% required conservative treatment and 21.5% or every fifth child had at least one tooth to be extracted (6).

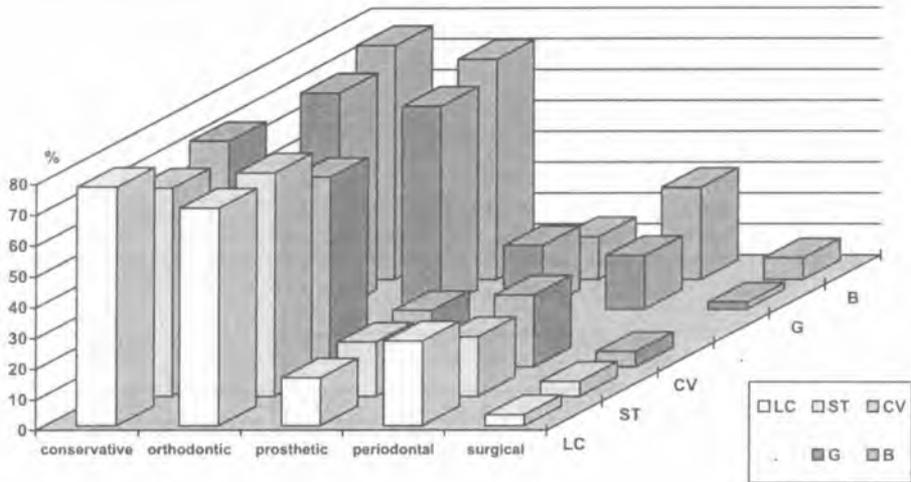


Fig. 1. Proportions of patients with particular treatment needs taking the environment and gender into account

According to Pogorzelska-Stronczak the main reasons for extraction in 12-year-old children were acute and chronic dentigenous inflammations occurring more frequently in mandible than in maxilla and teeth traumas, especially in front teeth (9).

The data published in 1991 by Szuszcwicz indicated that among Polish 12-year-old children 70.5% needed filling of at least one tooth surface, 8.9% required endodontic treatment and 14.5% tooth extraction (12).

Among periodontal treatment needs (TN) the TN1 need prevailed in 76.67% of the examined children while TH2 need was observed in 23.33% of the children. TN3 need was not observed. In girls TN1 need prevailed while in boys TN2 need was more frequent.

Jańczuk indicates that in 1995 the proportion of the examined with TN1 increased significantly from 39.1% to 55% while the proportion of children with TN2 decreased considerably from 34.5% to 21% (6).

Lublin results differ from countrywide data published by Banach and Szuszcwicz. The treatment needs changed in the years 1987-95 in favour of children requiring oral hygiene instruction. The need of scaling and replacing of overhanging fillings decreased from 35.4% to 21%.

Moszczeńska-Cieślukowska and Gieorgijewska showed that in Warsaw in 1993 nine times more 12-year-old children required periodontal TN1 than TN2 treatment (4, 8).

Stopa et al. found that in Poznań region periodontal treatment needs included mostly scaling and replacing of overhanging fillings. Studies performed 8 years later, in 1995, in the same region by Chłapowska indicated that the number of children with

hygienic shortcomings increased significantly while at the same time the population with dental calculus decreased. Thus there occurred a change in required treatment needs in favour of oral hygiene instruction (3, 10).

On the basis of the presented data it can be concluded that in the Lublin region there are higher periodontal treatment needs than in other regions.

The study performed in the Lublin region also concerned temporomandibular joints. It was shown that normal condition existed in most of the 12-year-olds i.e. 83.33%. The proportion of temporomandibular joints disorders was higher in girls. Such disorders were found in 20.43% of girls among which 19.36% experienced clicking and 1.07% self-correcting dislocations. In boys, no dislocations were observed and the proportion of patients with clicking was 12.64%. Most children without disorders in temporomandibular joints came from a large city while most disorders were found in the rural environment.

Analysing data from other regions of Poland one can find small differences in values to the Lublin region's disadvantage. According to Gordon et al. within a six-year period the proportion of children with temporomandibular joints disorders decreased by 1.6% and in 1993 it was 10.6%. This value is by 6.07% lower than the one observed in the Lublin region. In Warsaw and its vicinities temporomandibular joints disorders were observed more frequently in girls (44%) than boys (16.7%) (5).

Gieorgijewska studied the population of 12-year-old Warsaw children in 1991 and found that a larger proportion of girls (10%) than boys (8.9%) had temporomandibular joints disorders. Among disorders in both groups the most frequent one was clicking in the joints in the rural environment (23.3%) (4).

After the analysis of the occlusion condition in 12-year-olds from the Lublin region it was found that 68.33% of 12-year-olds had orthodontic defect and most of them consisted of medium and severe defects. The smallest number of children with orthodontic defect were found in the rural environment (61.67%). Occlusion defects were observed less frequently in girls.

In comparison to countrywide study by Szuszczyk the frequency of occurrence of orthodontic defects in the Lublin region is almost twice higher. In 1987 37.2% of 12-year-olds had a diagnosed orthodontic defect (12). According to Jańczuk, in 1995 orthodontic treatment was required by 64% of 12-year-old children. Boys needed the treatment (66%) more often than girls (62%). This is a value comparable to the Lublin region results where 68.33% of children required occlusion defects treatment (6)

According to Gordon et al. and Remiszewski et al. in the population of 12-year-old children from the Warsaw region the frequency of occurrence of occlusion defects was 36.7% in 1987 and 62.8% in 1993. In the studies from 1987 a mild form of defects prevailed while 6 year later it was a medium and severe form. The proportion of girls with a defect was higher than the proportion of boys. The defects were observed least frequently in the rural environment (58.3%) (5, 10).

In 1995 Borysewicz-Lewicka studied children in the same part of the Poznań region and found that 61.5% of the children had occlusion defect, which was 21.5% more

than in previous study. Most of them came from a small town (68.1%). In relation to the increased number of occlusion defects the treatment needs increased proportionally 92).

CONCLUSIONS

1. The frequency of respective treatment needs in children from the Lublin region does not differ considerably compared to countrywide data.

2. The treatment needs of stomatognathic system in 12-year-olds indicate necessity of prophylaxis intensification.

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STRESZCZENIE

Celem pracy było określenie potrzeb leczniczych narządu żucia u dzieci 12-letnich z makroregionu lubelskiego. Uzyskane wyniki nie odbiegają od danych ogólnopolskich i wskazują na konieczność intensyfikacji profilaktyki.

