

Influence of Social Factors and General Health Status on Oral Health

Utjecaj socijalnih čimbenika i općeg zdravlja na oralno zdravlje

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Summary

Within the framework of a multinational study to determine the gerostomatological treatment need a number of social criteria was examined concerning their influence on oral health. Additionally the oral health status of institutionalized elderly people was compared with that of non-institutionalized elderly people. The results showed that urban residents generally enjoy better oral health than rural residents. Differences were shown to exist for different occupations. A lower level of professional qualification was related most of the time to a higher treatment need. Oral health among nursing home residents was generally worse than among the people living independently. Consequently, there was a higher treatment need for the nursing home residents.

Key words: *elderly, oral health status, handicapped, sociodemographics*

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Introduction

Social factors exert a great influence on the features of oral health status. For elderly people they become factors determining individual social health which are paid more attention in geriatric care (1). With the demographic changes expected for the future, or to some extent already realized in most industrialized countries with a significant increase in the old age population, consideration and evaluation of social factors becomes relevant

for the dentist, too (2-5). There is, however, still a general need for further research regarding the verification of the influence of social medical factors on oral health and preventive behaviour (6).

The dependence of oral health on social factors is given mainly by the effect of the latter on preventive behaviour, including utilization of dental services. Indications of this were obtained by studies on sociodemographic variables, occupational training and professional status, as well as age (7,8). In addition to these social factors the deter-

orating general health status of elderly people had negative effects on health. Chronic illness or multimorbid conditions increasingly reduce mental and physical performance. The limitation of mobility to the point of immobility may be caused by cerebrovascular stroke, committing quite a number of people to the wheel chair, which in turn affects to a considerable extent ambulatory dental care (9). The necessary attention to dental health behaviour is usually reduced parallel to the general deterioration of health, and with increasing mental and physical limitations preventive measures can no longer be carried out independently (10-12).

Reduced general health and social isolation are the main reasons for admittance of elderly citizens to nursing homes or long-term care facilities. In conformity with the increase in physical and cognitive impairment the cost of dental treatment increase, which has been confirmed by many studies (13-15). Currently, the oral health status of the old age population is unsatisfactory. This is mainly the result of edentulism and insufficient prosthetic care. Manderson and Ettinger (16) found nursing home residents to be 91% edentulous, of which 70% received insufficient prosthetic care. On the other elderly citizens have a relatively low desire for treatment, varying scarcely between nursing home residents and individuals living independently (17-20).

Nationally and internationally there are only few data available concerning the prevalence and level of social and general health factors in their interdependence with oral health. Therefore, essential social parameters related to oral health and treatment need were studied within the framework of the multinational study for the determination of the gerostomatological treatment requirements. The results of this part of the study are described below.

Methods

In a publication preceding this study Heinrich et al. (21) described among other things the methodology of the multinational study for the determination of gerostomatological treatment need so that a repetition of the methodology is essentially redundant. In supplementing this it may be added that before clinical evaluation social factors which might influence oral health were collected by standardized interview. This included information on:

- **residence**
 - urban
 - rural
- **occupation**
 - unskilled, but employed in industry, agriculture, handicraft, or others
 - skilled
 - professional
 - unemployed
- **social living situation**
 - living in a family household
 - living in a single person household
 - institutionalized
- **general health status**
 - healthy
 - handicapped
 - in need of care
- **willingness to obtain dental care**
 - treatment desire
 - treatment refusal
 - indifferent attitude.

These findings were correlated with tooth status, characterized by the **number of teeth** and the **ratio of replaced to missing teeth (Replacement Index)**. Additionally the oral health status of **nursing home residents**, including the evaluation of prosthetic treatment need and dental hygiene, was compared to that of the **population living independently (control group)**.

The results refer to the age groups (AG) 65-74 and >74 years, since only from that age on did the selected social criteria have a clear influence on oral health, and the general health status became increasingly negative, which also affected oral health behaviour.

Results

1. Social characteristics

The subject of the study samples from Austria (A), Germany (D), Italy (I), Poland (PL), and Byelorussia (BY) were selected from **urban and rural areas**. The samples from Hungary (H) and Slovenia (SLO) consisted, however, of urban residents only. With the exception of Byelorussia (AG>74

years) there a majority of urban residents in all countries and for both age groups. The respective proportion of city residents varied between 58.7% (Austria) and 93.9% (Italy) for the 65 to 74 year-olds, and between 31.2% (Byelorussia) and 98.9% (Italy) for the >74 years subjects. The rural population (AG 65-74 years) was represented from 6.1% (Italy) to 41.3 % (Austria).

Among the >74 year-olds between 2% (Italy) and 68.8% (Byelorussia) were from rural communities (Table 1).

of professionals, the respective proportion in Byelorussia was 1.4%. The percentages for all other countries varied between these two values. The unemployed were represented by 17.3% (Germany) up to 44.9% (Poland). The proportion of unskilled workers was larger in the oldest age group than among the 65 to 74 year-olds. In a comparison by country the percentage of professionals reached up to one quarter of the subjects (Hungary). Nearly 95% of the subjects in this age group in Byelorussia were unskilled, and only 0.2% unemployed,

Table 1. Prevalence of social factors

Tablica 1. Prevalencija socijalnih čimbenika

Country	age group 65 - 74 years							age group > 74 years						
	A	D	H	I	PL	SLO	BY	A	D	H	I	PL	SLO	BY
N	121	2792	213	327	1173	116	426	67	2944	243	295	1388	95	481
	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Living situation														
urban	58.7	59.1	100	93.9	68.4	100	60.6	68.7	63.2	100	98.0	71.0	100	31.2
rural	41.3	40.9	0	6.1	31.6	0	39.4	31.3	36.8	0	2.0	29.0	0	68.8
in family	86.8	74.2	60.5	73.1	51.2	58.6	34.5	68.7	45.0	30.2	49.2	32.0	6.3	0.4
alone	11.6	16.5	29.1	26.9	15.4	2.6	9.2	28.4	21.6	28.8	38.6	14.9	3.2	0.8
institutionalized	1.7	9.4	10.5	0	33.5	38.8	56.3	3.0	33.4	31.0	12.2	53.1	90.5	98.8
Occupation														
unskilled		25.0	25.2	13.8	27.0	26.7	92.5		34.1	24.6	29.5	30.5	47.4	94.8
skilled		26.5	23.3	8.5	11.7	12.1	6.1		22.3	12.5	10.2	7.4	9.5	3.3
professional		31.2	26.2	19.3	16.4	25.5	1.4		23.9	25.8	18.0	12.2	10.5	1.7
not employed		17.3	25.2	37.9	44.9	36.2	0		19.8	37.1	33.5	49.6	32.6	0.2
General Health														
healthy	99.2	80.9	60.5	91.4	72.4	62.9	70.9	94.0	52.7	31.8	73.9	52.0	25.3	53.8
handicapped	0.8	18.2	38.1	5.8	21.0	37.1	28.6	6.0	40.3	61.6	13.6	33.8	73.7	45.2
in need of care	0	0.9	1.4	2.8	6.6	0	0.5	0	7.0	6.6	12.5	14.2	1.0	1.0
Dental treatment														
desired	78.5	68.1	85.7	93.0	65.0	68.1	48.8	73.1	52.8	50.4	87.8	50.1	19.0	37.2
rejected	1.7	10.4	12.9	4.3	16.7	8.6	24.2	4.5	18.8	40.9	2.4	30.8	23.2	25.4
indifferent	19.8	21.0	1.4	2.8	18.3	23.3	27.0	22.4	28.4	8.7	9.8	19.1	57.9	37.4

Categorised by **occupation**, it was surprising to see that in Byelorussia about 90% of the 65-74 year-olds had received no occupational training, in all other countries this proportion varied between 13.8% (Italy) and 26.7% (Slovenia). In a comparison by country the category of skilled workers was represented the most in Germany (26.5%), followed by Hungary (23.3%) and Slovenia (12.1%). Almost one third of the German sample consisted

whereas this percentage was much higher in other countries and reached 50% in Poland (Table 1).

Most of the 65 to 74 year-olds were still living in the **family household**, with the exception of the subjects from Byelorussia (34.5%). The percentage of people living alone was largest in Hungary with almost 30% and smallest in Byelorussia with 9.2% and in Slovenia with 2.6%. Correspondingly the percentage of people living in nursing

homes varied between 56.3% (Byelorussia) and 1.7% (Austria). The Italian sample does not include individuals from nursing homes. The subjects were living either in the family household (73.1%) or alone (26.9%). The percentage of persons >74 years living in family households, decreased in all samples. About one third in Poland and Hungary, two thirds in Austria and almost one half in Italy and in Germany were in this category. While nearly all subjects in Byelorussia and more than 90% in Slovenia were living in nursing homes, this was true in the other samples only for 3% (Austria) to 53% (Poland). In the comparison of countries between 28% and 39% indicated that they were living alone (Table 1).

The 65-74 year-olds from all countries rated their **general health status** mostly as good, i.e., they felt healthy. Less than one percent considered themselves as handicapped in Austria, but 38.1% in Hungary. The respective percentages for all other countries lay in between. The need for personal care was not yet of any importance in this age group in a numerical sense, in Italy and Poland scarcely 3% to 7% needed personal care. For the >74 year-olds 7% were in this category in Germany, 12.5% Italy and 14.2% in Poland, the percentages for all other countries falling clearly below these values. 94% of this age group in Austria rated themselves as healthy and only 25.3% in Slovenia. The proportion of handicapped reached a maximum value in Slovenia with 73% and minimum in Austria with 6% (Table 1).

The **willingness to accept dental care** was high in both age groups and in all countries. A negative attitude became apparent only in the age group >74 years, but ranked still below the proportion of the handicapped. An ambivalent attitude concerning dental care increased with age, with varying importance in the individual samples. While almost 60% of the >74-year-olds in Slovenia were indifferent regarding acceptance of dental care, the respective value in Hungary was less than 10% (Table 1).

2. Correlation between social factors and oral health status

The **average number of teeth** (Table 2) varied between 4 (Hungary) and 13 (Italy) for city residents and between 5 (Poland) and 12 (Austria). With the exception of Austria the rural population (65-74 years) had less teeth than the urban population. Taking into account the occupational qua-

lification in a comparison by country, professionals had a larger number of teeth, followed by skilled workers. Among those living in a family household, the number of teeth was higher than for those living alone, being lowest among nursing home residents for each of the countries included in the comparison. This tendency was found also with respect to the general health status. The number of teeth was generally lower for people who needed personal care than for those who were healthy or handicapped. For the >74 year-olds the number of teeth was less than for the younger AG in all countries. The Austrian subjects had the largest number of teeth. An average of 9.2% teeth were recorded for them in rural areas, in contrast to 6.9 only for urban residents. The number of teeth varied only slightly between urban and rural populations in Germany and Poland, where approximately three teeth were recorded, and this number was somewhat higher for the urban population. Professionals had usually more teeth, whereby the number varied between 2.8% (Hungary) and 10.9% (Italy).

The relationship between living conditions and number of teeth was comparable to that for age group 65 - 74 year. Accordingly, the >74 year old nursing home residents had the lowest number of teeth (1-6 teeth). Likewise the subjects with reduced health status and lack of treatment desire had less teeth than those with better general health and with the desire for treatment.

The met prosthetic treatment need, measured by the **Replacement Index**, increased with increasing age and was the highest in Germany with 85% of the >74 year old rural residents and lowest in Poland with 35% of the rural residents.

Among the occupation groups (AG 65-74) the highest Replacement Index was found in Hungarian unemployed subjects. For the >74 year-olds the maximum value of 90% was found in the Hungarian sample of skilled workers.

The largest differences in the Replacement Index were found for the >74 year old Italians, consistently with disadvantages for those handicapped by their social environment, health status, of behaviour (Table 2).

3. Comparison of oral findings between nursing home residents and persons living in a family or alone

The data for nursing home residents and the control group of the AG 65 - 74 refer to Germany,

Table 2. Mean number of teeth (NT) and Replacement Index (RI) in relation to social factors
 Tablica 2. Prosječan broj zuba (NT) i index nadomjestaka (RI) u odnosu prema socijalnim čimbenicima

Country	age group 65 - 74 years							age group > 74 years					
	A	D	H	I	PL	SLO	BY	A	D	H	I	PL	
Living situation													
urban	NT	11.28	7.08	3.82	13.37	7.15	6.72	10.18	6.85	3.31	1.78	8.61	3.40
	RI	62	74	82	49	51	64	39	67	80	86	54	53
rural	NT	12.06	6.23	-	-	5.26	-	8.18	9.24	3.29	-	-	2.76
	RI	60	81	-	-	44	-	20	68	85	-	-	35
in family	NT	12.08	7.16	4.23	13.63	7.24	7.34	10.65	7.80	3.90	2.88	8.43	3.80
	RI	60	77	83	46	55	78	44	64	83	82	55	53
alone	NT	-	5.97	3.33	11.92	7.56	-	9.87	-	3.10	1.41	9.17	3.54
	RI	-	76	81	55	57	-	59	-	82	88	58	57
institutionalized	NT	-	4.71	3.32	-	5.05	5.51	8.54	-	2.63	1.19	6.17	2.77
	RI	-	74	76	-	35	41	18	-	79	87	40	42
Occupation													
unskilled	NT	-	5.68	4.62	13.40	5.37	6.00	9.65	-	2.87	1.29	8.58	3.15
	RI	-	79	69	57	49	41	31	-	81	81	56	42
skilled	NT	-	5.77	2.56	12.25	6.49	-	4.08	-	3.46	1.90	5.97	4.32
	RI	-	81	81	55	52	-	33	-	82	90	45	49
professional	NT	-	7.78	5.11	14.19	11.41	9.24	-	-	3.81	2.79	10.94	5.72
	RI	-	75	88	34	59	82	-	-	82	89	57	65
not employed	NT	-	7.67	2.54	11.65	5.60	5.71	-	-	3.30	1.29	8.25	2.64
	RI	-	70	90	52	45	69	-	-	82	87	51	47
General Health													
healthy	NT	11.70	7.12	4.42	12.86	7.00	7.15	9.84	7.72	3.68	2.49	9.66	4.02
	RI	61	77	84	51	52	79	33	66	85	84	56	52
handicapped	NT	-	5.11	3.10	-	5.25	6.00	8.21	-	2.93	1.59	4.48	2.56
	RI	-	76	79	-	42	39	28	-	80	86	66	44
in need of care	NT	-	4.77	-	-	5.82	-	-	-	2.60	-	5.54	1.81
	RI	-	65	-	-	28	-	-	-	64	-	35	39
Dental treatment													
desired	NT	12.28	7.69	4.08	13.23	7.10	7.27	10.10	7.78	4.09	2.60	8.69	3.64
	RI	60	76	86	50	58	79	38	71	83	90	56	59
rejected	NT	-	4.07	2.35	-	5.15	-	7.96	-	2.11	0.73	-	2.82
	RI	-	79	57	-	29	-	25	-	81	81	-	40
indifferent	NT	8.58	4.72	-	-	5.89	4.52	9.38	-	2.50	1.91	5.66	2.74
	RI	71	76	-	-	32	37	24	-	80	85	26	31

Poland, Slovenia, and Byelorussia; for the >74 year-olds only comparisons were limited to Germany and Poland. **Caries prevalence** (Table 3) of the 65 - 74 year old nursing home residents was higher than for the control group in all countries under consideration. DMFT values ranged from 27 (Byelorussia) to 30 (Germany). The M value generally prevailed, whereby the relationship between DT-, FT-, and MT components did not differ among nursing home residents and control group population. There was no difference in the frequency of caries between nursing home residents and

control group for the >74 year olds; only the proportion of filled teeth was larger for the control group than for nursing home residents and correspondingly the proportion of decayed teeth was higher for the nursing home residents.

The results of the **periodontal status** (Table 3) of the 65 - 74 year-olds were less favourable for the nursing home residents in all comparisons. Germany was an exception, where a higher prevalence of deep pockets was found for the control group. For the >74year-olds deep pockets were likewise found more often among nursing home resi-

Table 3. Comparison of Oral Health between institutionalized and not institutionalized elderly
 Tablica 3. Usporedba oralnog zdravlja između starijih osoba u ustanovama i izvan njih

Living situation	age group 65 - 74 years								age group > 74 years			
	institutionalized				not institutionalized				institution.		not institut.	
Country	D	PL	SLO	BY	D	PL	SLO	BY	D	PL	D	PL
N	125	166	16	73	916	250	18	46	652	427	1122	325
	%	%	%	%	%	%	%	%	%	%	%	%
Number of teeth	4.70	5.05	5.51	8.54	6.94	7.31	7.49	10.48	2.58	2.77	3.64	3.72
sound teeth	1.99	2.26	1.40	4.98	3.47	3.36	2.46	5.46	1.10	1.10	1.87	1.59
teeth in occlusion	2.17	2.05	1.27	1.72	3.97	3.79	3.55	3.33	0.95	0.90	1.74	1.46
DMFT	30.00	29.74	30.60	27.02	28.53	28.64	29.53	26.54	30.83	30.90	30.08	30.41
DT	1.38	2.32	2.84	2.10	1.22	1.68	0.99	0.97	1.03	1.28	0.70	1.19
MT	27.29	26.95	26.49	23.46	25.06	24.69	24.51	21.52	29.32	29.23	28.31	28.28
FT	1.33	0.47	1.27	1.46	2.25	2.28	4.04	4.05	0.48	0.38	1.07	0.93
Replacement Index	74	35	41	18	77	56	79	47	79	42	83	54
CPITN (% of subjects)												
healthy	0.9	4.4	0	0	1.8	2.9	3.6	0	3.0	3.5	3.6	7.1
bleeding	4.7	11.1	0	0	5.7	5.6	7.3	0	4.3	8.4	5.3	2.9
calculus	36.8	14.9	38.1	2.2	28.2	22.9	18.2	0	25.4	23.2	26.8	20.5
shallow pockets	45.3	33.2	14.3	50.0	42.4	46.4	52.7	49.6	46.1	28.6	43.3	45.2
deep pockets	12.3	36.5	47.6	47.8	21.9	22.2	18.2	50.4	21.1	36.5	20.9	24.3
% with mucosal diseases	23.9	30.8	95.6	5.0	30.0	37.9	49.3	4.8	34.4	44.0	37.6	35.9

dents. This meant, again with the exception of Germany, that complex periodontal care was more often needed for nursing home residents.

A comparison of **dentition status** and **met prosthetic treatment need** (Table 3) showed clear differences between control groups. Nursing home residents in all countries - with the exception of Slovenia - had less healthy teeth in occlusion. The number of teeth replaced by dentures or bridges was lower however. Thereby the ratio of replaced to missing teeth was less favourable for the nursing home residents.

The frequency of **lesions of oral mucous** (Table 3) differed widely among nursing home residents. While this frequency was limited to 5% in Byelorussia, it was 96% in Slovenia, 31% in Poland and 24% in Germany. Differences between the two groups existed only in Slovenia. The prevalence of lesions of oral mucous increased for the >74 year-olds and reached 44% in Poland. While

the prevalence of mucosal diseases of >74 year-olds was nearly identical for the control groups in Germany, the ratio of affected persons the Polish nursing home group was almost 10% higher than in the control group.

Edentulism (Table 4) in the sample of nursing home residents of 65 - 74 year-olds reached a maximum value of 47.3% (Germany) and rose to 65% for the >74 year-olds in Germany. In Poland it reached 57.9%. In all countries women were more often affected than men. A similar trend existed for most of the urban residents.

Prosthetic care (**wearing of dentures**) (Table 4) was largely represented by full dentures. In Germany the proportion of subjects with full dentures was clearly higher for nursing home residents than for the control group, while the reverse was for the other countries. People wearing partial dentures were majority in the control groups of all countries.

Table 4. Denture status and treatment need between institutionalized and not institutionalized elderly
 Tablica 4. Protetski nadomjestci i potrebni postupci između starijih osoba u ustanovama i izvan njih

Living situation	age group 65 - 74 years								age > 74 years			
	institutionalized				not institutionalized				institution.		not institut.	
Country	D	PL	SLO	BY	D	PL	SLO	BY	D	PL	D	PL
N	125	166	16	73	916	250	18	46	652	427	1122	325
	%	%	%	%	%	%	%	%	%	%	%	%
Edentulism	47.3	42.2	35.6	30.4	36.2	32.1	25.4	24.7	65.1	57.9	57.3	49.9
Denture status jaw												
no denture upper	14.8	54.7	60.0	80.8	15.2	36.6	25.4	66.1	16.4	47.5	10.4	36.9
lower	29.2	63.6	57.8	83.8	24.4	46.9	26.8	66.1	25.7	58.1	18.1	47.8
partial denture upper	16.7	7.4	8.9	3.8	29.1	22.4	16.9	7.0	9.1	7.2	16.1	14.1
lower	19.3	7.6	11.1	2.9	34.9	21.0	1.4	7.5	13.5	7.3	21.0	13.5
full denture upper	65.5	31.0	31.1	7.5	53.2	37.7	49.3	19.4	70.3	41.5	70.0	44.9
lower	34.8	18.6	0	2.5	33.8	22.7	0	17.2	49.6	24.6	51.9	30.7
not wearing upper	3.0	6.6	0	7.9	2.4	3.3	8.5	42.4	4.3	3.8	3.5	4.1
lower	16.7	9.9	31.1	10.8	6.7	9.1	71.8	9.1	11.3	10.0	8.9	8.0
Duration of wearing												
11 - 15 years	20.3	14.2	15.0	8.3	16.3	14.5	18.2	11.1	15.8	20.2	16.9	16.8
> 15 years	18.5	20.1	60.0	16.7	16.9	16.8	-	-	45.8	39.8	31.0	26.3
Denture hygiene												
good	37.2	30.9	76.2	25.0	52.9	42.2	75.6	68.3	34.7	52.5	44.2	33.3
not optimal	44.7	40.7	23.8	56.3	30.7	38.7	22.2	31.7	47.3	44.1	37.0	42.8
bad	18.1	28.4	0	18.8	16.3	19.0	2.2	0	18.0	30.4	16.3	19.0
Denture treatment need jaw												
no denture upper	36.0	22.1	42.2	20.0	51.9	33.8	45.1	43.0	34.6	19.8	43.0	26.6
lower	30.3	14.8	40.0	15.0	47.3	27.6	40.8	40.3	30.4	12.9	38.3	20.4
repair upper	5.7	1.5	4.4	0.8	5.3	5.6	2.8	1.1	3.0	2.0	3.9	3.7
lower	6.4	1.3	2.2	0.8	5.6	4.6	5.6	1.6	5.2	2.2	5.6	3.2
partial denture upper	8.7	24.9	2.2	35.0	11.8	27.4	12.7	34.4	6.4	14.9	7.7	16.0
lower	20.8	35.4	28.9	43.8	20.1	39.6	29.6	36.6	11.8	23.6	12.9	26.0
full denture upper	33.7	47.8	48.9	40.0	22.9	31.0	35.2	18.8	42.1	60.4	33.7	49.9
lower	29.2	46.8	28.9	34.6	19.6	25.8	21.1	18.3	42.4	59.6	32.4	47.2
rebasings upper	15.9	3.6	2.2	4.2	8.1	2.1	4.2	2.7	13.9	2.8	11.6	3.8
lower	13.3	1.8	0	5.8	7.4	2.4	2.8	3.2	10.2	1.8	10.8	3.2

Large differences existed also with respects to the **wearing time of dentures** (Table 4). Generally it is assumed that from a functional point of view the wearing time of dentures may be acceptable for a time span of up to 10 years. From this perspective, however, the percentage of subjects with a wearing time of dentures of 11 to 15 years and beyond (up to 46%) is very high, with a significantly higher proportion of nursing home residents. **Denture hygiene** (Table 4) was markedly wor-

se for nursing home residents than for the subjects of the control groups (24 - 56% not optimal and 19 - 28% bad prosthetic hygiene). For the >74 year-olds the percentages were 44 - 47 and 18 - 30% respectively.

The **prosthetic treatment need** (Table 4) indicates in particular a greater need for full dentures. In all countries this was higher for nursing home residents for both age groups, than for the control group. 34% - 49% of nursing home resi-

dents needed full upper dentures, and 30% - 47% full lower dentures. So the difference to the control group amounted to about 10%. For the >74 year old nursing home residents the necessity of being provided with total dentures was greater. While 40% needed total dentures in Germany, in Poland this need included 60%. The demand for partial dentures was in both age groups generally higher in the control groups than for the nursing home residents.

There was a larger need (about 14%) for **re-basting** in the German sample of nursing home residents, while in other countries this need was fairly balanced with about 2% - 6%. This refers also to necessary repair work.

Discussion

The results of this multinational study allow for the first time comparison of the influence of various social factors on oral health. It should be kept in mind, that the whole sample consisted of subjects, whose life experience was subjects to different social systems, which undoubtedly contributed decisively to the formation of perceived values, beliefs, attitudes and behaviour, determining, by means of differing medical care systems, also the quality of medical and dental care. This analysis was, however, not part of the study. All in all the results confirm that the oral health status of the elderly falls below acceptable levels in all countries included in the comparison. In addition to oral epidemiological data studies are very necessary for optimization of dental care, which include the social background of the elderly population, because health always reflects the multi-dimensional character of subjective attitudes and behaviour. The results presented signal the trend that various social factors determine in different ways the level of oral health. This applies both to the comparison of countries and to the age groups under consideration. Generally the oral health status of urban residents was, better than for the rural population. Only at an advanced age did these differences begin to vanish. Increasing deterioration of general health reduced the perceived magnitude of oral problems.

The level of educational and social status were well reflected in the level of oral health. Subjects without occupational training had most unfavourable status of oral health, and professionals enjoyed

the best oral conditions. During all life segments oral health is subjects both to the summation and interaction of genetic predisposition, behaviour, and sociological environmental factors. With increasing age, length of exposure and changes in quantity and quality of social factors, as well as chronic illnesses may imply negative consequences on oral health and on preventive behaviour and treatment need (22). It is, therefore, consequent that elderly people who are exposed to risk factors from a social and general health point of view, require adequate dental care. In realization of the concept "Ageing in Health" (23) recommended by the World Health Organisation, well balanced strategies for the advancement of oral health of the elderly have, therefore, to be integrated (24). While the majority of senior citizens are relatively healthy and independent, special socio-medical treatment need is anticipated for the United States for about 40% of the elderly population, resulting from complex medical and social problems (25). Information on the socio-cultural environment of elderly patients is useful for the planning of therapy, as e.g. social contacts of senior citizens can be helpful in supporting daily oral hygiene, which in turn is important for prognosis of oral disease (26). While generally the high dental treatment need of elderly people is reported (27), it is 70% substantially higher for nursing home residents (13-15). These findings correlate with very low utilization of dental services by senior citizens. While physicians are consulted more often with increasing age, dentist appointments of elderly persons become less frequent (28). A representative study in the United States revealed that 63% of nursing home residents consulted the dentist during the year preceding the study and 47% for the last time five years before the study (29). Other authors report an even lower rate of consultation (30). Various models have been developed to explain this pattern of behaviour. As early as 1935 Lewin (31) described the behaviour as the function of personal and environmental factors. Due to their living conditions nursing home residents are exposed to particular environmental factors which may possibly influence the utilization in a negative manner (32). This includes lack of interest on the part of the nursing home staff in supporting the utilization; unsatisfactory of lack of co-operation with the dentist and insufficient technical or spatial prerequisites for dental care in the nursing home (2). There is, however, scarce information on the acceptance of den-

tal care by senior citizens, whereby the availability of a nearby dental practice and the degree of mobility of the patients seem to be sure predictors of utilization (33,34). Differences of oral health between the nursing home and control group population were particularly significant in the multinational study. For example edentulism, wearing time of dentures and Replacement Index were consistently less favourable for nursing home residents than for control groups. Correlations were seen between residence (urban/rural) as well as occupational training and number of teeth in occlusion. One has to concede, however, that it was not so much the living situation in the nursing home, but the sum total of all factors resulting from the required integration in the nursing home, which explain the differences. It becomes evident from the summation

of results that a number of social factors results in favourable preventive behaviour, which increases at first the chance of life long dentition. However, with increasing age physical and mental handicaps, as well as unfavourable social factors, may have a negative influence and may thereby become risk factors for oral health. Usually, nursing home residents have a lower oral health status. Therefore, they deserve favourable dental attention, also with respect to instruction and control of oral and prosthetic hygiene. So dental care for the elderly, subject to social and health risk factors, should be realized in a co-ordinated effort regarding organization and contents with responsible co-operation of all in charge of social and health care for the elderly.

UTJECAJ SOCIJALNIH ČIMBENIKA I OPĆEG ZDRAVLJA NA ORALNO ZDRAVLJE

Sažetak

U okviru multinacionalne studije za određivanje gerostomatoloških potreba ispitan je utjecaj velikog broja socijalnih čimbenika na oralno zdravlje. Također je napravljena i usporedba oralnog statusa kod starijih osoba smještenih u određenim institucijama i onih u vlastitim domovima. Rezultati pokazuju da je u gradovima znatno bolje oralno zdravlje nego među seoskom populacijom. Postoje također i razlike između različitih razina obrazovanja. Niži stupanj obrazovanja je povezan s većim potrebama za oralnom rehabilitacijom. Stanje oralnog zdravlja u staračkim domovima je mnogo gore nego kod osoba koje samostalno žive, pa je shodno tome i potreba za oralnom rehabilitacijom u domovima puno veća.

Ključne riječi: starost, status oralnog zdravlja, sociodemografija

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