

MAŁGORZATA STODÓŁKIEWICZ¹, JOANNA KRAWCZYK², JACEK SZKUTNIK¹,
MARCIN BERGER¹

The assessment of periodontal status and treatment needs of the adult population aged 34-44 residing in Lublin province and visiting the dentist regularly

Abstract

Introduction. Periodontitis is a group of inflammatory disorders affecting periodontal tissues. This condition manifests by a progressive destruction of the alveolar bone, subsequently leading to tooth loss. World Health Organization introduced Community Periodontal Index of Treatment Needs in order to gain data regarding periodontal health and treatment needs of people with periodontitis.

Aim. To evaluate the periodontal status of citizens living in the city of Lublin and its surrounding, using Community Periodontal Index of Treatment Needs (CPITN).

Material and methods. Community Periodontal Index of Treatment Needs was used to assess the periodontal status among 180 patients aged 35-44 residing in Lublin and the area around it.

Results. Periodontal diseases have been observed in over 90% of the examined population. Treatment need index TN1 has referred to 26.11% of the patients, TN2 – 61.67% and TN3 – 2.22% respectively.

Conclusions. Patients who visit the dentist regularly have a better periodontal status as compared to groups randomly selected.

Keywords: periodontitis, periodontal index, public health.

DOI: 10.2478/pjph-2014-0019

INTRODUCTION

Periodontitis is a group of inflammatory disorders affecting periodontal tissues. This condition manifests by a progressive destruction of the alveolar bone, subsequently leading to tooth loss. The main factor that attributes to periodontitis is bad oral hygiene leading to accumulation of plaque and growth of specific bacteria. Other factors such as overall health, smoking and genetic factors are also involved. In 1982 World Health Organization introduced Community Periodontal Index of Treatment Needs (CPITN) in order to gain epidemiological data regarding periodontal health and treatment needs of people with periodontitis [1]. On the basis of this index, the aims of health were defined for three different age groups – 15-19 years, 35-44 years and 65-74 years [2]. According to Jańczuk only 1% of 1380 patients aged 35-44 had healthy periodontium, 83% needed improvement in hygiene and 15% complex periodontal treatment [3].

AIM

The aim of this study was to evaluate the periodontal status of citizens of Lublin province, using CPITN.

MATERIAL AND METHODS

The study has been conducted among 180 patients aged 35-44 residing in Lublin and the area around it. The examined group came from three residential environments: from a big city (Lublin) – marked with a “BC” symbol, from a small town (Świdnik, Kraśnik, Lubartów) – “ST”, and from a rural area (Niedrzewica, Jabłonna) – “RA”. In each group comprising 60 patients there were 30 men and 30 women. The majority of the examined patients had a secondary general, vocational or primary education. The examinations were carried out in dental offices which were visited by those patients at least once a year.

Community Periodontal Index of Treatment Needs was used to assess the periodontal status. The examination was conducted with a calibrated tube WHO 621 with a spherical ending having a diameter of 0.5 mm. The pressure force of the sound during the examination was equal to 25 kg. For each sextant the codes of symptoms were determined – from CPI-0 to CPI-4. The maximum value of the index obtained from six sextants constituted the basis for determining the treatment needs (TN0 – TN3).

The results of the examinations were subject to a statistical analysis with the use of X2 test and “STATISTICA” programme.

¹ Department of Functional Masticatory Disorders of Medical University of Lublin, Poland

² Department of Dental Prosthetics of Medical University of Lublin, Poland

RESULTS

Determining the number of patients with the highest value of individual codes of CPITN index in sextants served as the basis for calculations regarding periodontal status. In the whole population of the examined patients only 10% have been revealed to possess the maximum number of codes 0, which corresponds to a healthy periodontium (Tab. 1). The majority of the examined patients with a healthy periodontium have been found in the male group from the big city (16.67%), whereas such a case has not been noted down at all among women from the rural areas. When it comes to the frequency of appearance of code 0 as the maximum value no difference has been detected between the male and the female group (values of 10%). The highest proportion of persons with the maximum value of codes equal to 1 (Code 1) has been observed among the men from the big city and it has amounted to 50%. Over half of the examined patients (55%) have scored the highest value of codes equal to 2 (Code 2). This proportion has reached 80% among the women inhabiting the rural areas, the lowest one (23.33%) has been found among the men from the big city. Having analyzed this parameter in three different environments, its highest value has been revealed among the rural population (71.67%), a slightly lower one among the people living in a small town (60%) and the big city (33.33%). In the group of people aged 35-44 only 6.67% have had gingival pockets with the depth of 3.5-5.5mm. The biggest number of the highest codes has been observed among the women from a small town (13.33%), whereas among the women from the big city such codes have not appeared at all. The gingival pockets deeper than 6mm (Code 4) have been detected among 2.22% of the examined patients. There have been no differences related to a sex of the examined patients.

Based on the results of the individual sextants with the use of CPITN codes, periodontal treatment needs have been determined. The lack of needs (TN0 index) has referred to a group of patients with a healthy periodontium and it has amounted to 10% among the whole population (Tab. 2).

The need to conduct a training on dental care, specified as TN1 index, has referred to 26.11% of the patients with the maximum value of codes equal to 1. This need has been most often observed among the inhabitants of the big city and it has concerned 43.33% of the examined population compared to 21.66% in ST and 13.33 in RA. These differences have been statistically relevant.

The index of periodontal treatment needs TN2 qualifies patients with the maximum value of codes 2 and 3 for treatment. The need for this type of treatment has referred to 61.67% of a general number of the examined patients. The highest proportion of patients with TN2 index has been observed in a group of women from the rural areas (86.67%).

The need for comprehensive specialist treatment, surgeries, curettage and training on dental care (TN3) has concerned only 2.22% of the whole population of the examined patients aged 35-44.

The biggest number of healthy sextants per one person has appeared among the men coming from the big city, in the case

of code 0 it was equal to 2.93 and regarding the women from the big city the value for the same code was 2.80. In the big city in the examined population of both men and women the codes with the value 4 have not been observed at all (Tab. 3).

TABLE 1. Periodontal status of people aged 35-44 presented as a percentage of persons with the highest value of codes of CPITN index in sextants.

Residence	Sex	n	Percentage of persons with the highest value of codes in sextants				
			Code 0	Code 1	Code 2	Code 3	Code 4
BC	M	30	16.67	50	23.33	10.00	0.00
	F	30	20	36.67	43.33	0.00	0.00
	Both	60	18.33 ^{a,b}	43.33 ^{cd}	33.33 ^{fg}	5.00	0.00
ST	M	30	3.33	30	60.00	6.67	0.00
	F	30	10.00	13.33	60.00	13.33	3.33
	Both	60	6.67 ^b	21.66 ^d	60.00 ^e	10.00	1.67
RA	M	30	10.00	16.66	63.33	3.33	6.67
	F	30	0.00	10.00	80.00	6.67	3.33
	Both	60	5.00 ^a	13.33 ^c	71.67 ^f	5.00	5.00
Men		90	10	32.2	48.89	6.61	2.22
Women		90	10	20	61.11	6.67	2.22
Total: BC, ST, RA	M	90	10.00	32.22 ^e	48.89	6.67	2.22
	F	90	10.00	20.00 ^c	61.11	6.67	2.22
	Both	180	10.00	26.11	55.00	6.67	2.22

^a X² = 5.175 p<0.05
^b X² = 3.733 p<0.05
^c X² = 13.293 p<0.001
^d X² = 6.419 p<0.02
^e X² = 3.484 p<0.05
^f X² = 17.677 p<0.001
^g X² = 9.667 p<0.01

Code 0 – healthy periodontal status

Code 1 – bleeding during teeth cleaning

Code 2 – presence of plaque, gingival pockets up to 3.5 mm deep

Code 3 – presence of gingival pockets with the depth of 3.5-5.5 mm

Code 4 – presence of gingival pockets deeper than 6 mm

TABLE 2. Periodontal treatment needs in the examined population presented as a percentage of person with a relevant category of treatment needs.

Residence	Sex	n	Categories of treatment needs			
			TN 0	TN 1	TN 2	TN 3
BC	M	30	16.67	50.00	33.33	0.00
	F	30	20.00	36.67	43.33	0.00
	Both	60	18.33	43.33 ^{a,b}	38.33	0.00
ST	M	30	3.33	30.00	66.67	0.00
	F	30	10.00	13.33	73.33	3.33
	Both	60	6.67	21.66 ^b	70.00	1.67
RA	M	30	10.00	16.66	66.67	6.67
	F	30	0.00	10.00	86.67	3.33
	Both	60	5.00	13.33 ^a	76.67	5.00
Men		90	10	32.22 ^c	55.56	2.22
Women		90	10	20 ^c	67.78	2.22
Total: BC, ST, RA		180	10	26.11	61.67	2.22

^a X² = 13.293; p<0.001
^b X² = 6.419; p<0.05
^c X² = 3.484; p<0.05

TN0 – at-home dental care

TN1 – TN0 + the need for a dental care training

TN2 – TN0 + TN1 + the need for plaque removal and correction of fillings

TN3 – TN0 + TN1 + TN2 + specialist treatment required

TABLE 3. The mean numbers of sextants with relevant values of CPI codes per person including sex and residential environment.

Residence	Sex	n	Code 0	Code 1	Code 2	Code 3	Code 4	x
BC	M	30	2.93	1.77	0.67	0.17	0.00	0.47
	F	30	2.80	1.77	0.80	0.00	0.00	0.63
	Both	60	2.78	1.77	0.74	0.09	0.00	0.55
ST	M	30	2.20	2.33	1.10	0.07	0.00	0.30
	F	30	1.40	1.93	1.57	0.13	0.03	0.93
	Both	60	1.80	2.13	1.34	0.10	0.015	0.62
RA	M	30	1.80	1.87	1.3	0.03	0.07	0.93
	F	30	0.83	2.07	1.9	0.07	0.03	1.10
	Both	60	1.32	1.97	1.60	0.05	0.05	1.02
Men		90	2.31	1.99	1.02	0.09	0.02	0.57
Women		90	1.68	1.92	1.42	0.07	0.02	0.89
Total: BC, ST, RA		180	1.99	1.95	1.22	0.08	0.02	0.73

DISCUSSION

A healthy periodontium among the examined inhabitants of Lublin province visiting the dentist regularly has been observed among 10% of the patients. In the big city this value has amounted to 18.33%, in a small town – 6.67% and in the rural areas – 5%. In 2000 in Katowice province a proportion of patients with the maximum value of codes CPI=0 was 8.33% of the city inhabitants, 5% of a town inhabitants and did not appear at all among patients coming from the rural areas [4]. Among the inhabitants of Warsaw province a proportion of patients with a healthy periodontium was equal to only 1.69% [5]. In Jodkowska's research study from 2002 on the same age group a healthy periodontium was detected in 14.1% of all cases, whereas slightly higher values were observed among women (14.8%) and in a city (15.4%). [6]. In 2011 a nationwide study on the frequency of appearance of periodontal diseases in big urban areas revealed a healthy periodontium in 1.1% of the examined patients, including 3.76% among the inhabitants of Lublin [7], which is at variance with our own observations. This may have resulted from a selection of the examined populations. This study has been based on the patients visiting the dentist regularly.

The patients who have been diagnosed with only gingival bleeding have constituted 26.11% of the total number of the examined patients, and 43.33% of the ones from Lublin. A nationwide study has revealed that this parameter amounts to 33.83% in Lublin [7], 12.87% in Katowice province. Most often the presence of a gingival inflammation has been observed among the inhabitants of big cities in comparison to other environments [5].

Reports from nationwide studies inform that a proportion of patients with plaque was equal to 22.9% in 2011 (as compared to 1987 – 42%), [7] in our own study this value has been much higher – 55% respectively: BC- 33.33%, RA- 71.67%. In 1998 Morris et al observed the appearance of plaque in as many as 74% cases among the examined patients in Great Britain [8].

Pathological pockets with the depth of 3.5-5.5 mm have been detected in 31.67% of the adults from Katowice and in our own study only in 5% of Lublin inhabitants.

In total in Lublin region pathological pockets with the depth of 3.5-5.5 mm have been observed among 6.67% of the examined patients and in Katowice province in 35% [4]. The above-mentioned data in connection with the results regarding the frequency of appearance of plaque determine a number of patients who need to have plaque removed, defectively made prosthetic reconstructions and overhanging fillings corrected, and a curettage of pathological gingival pockets performed (TN2). In a nationwide study, a proportion of such patients in Lublin province has amounted to 61.67% and in Warsaw province -73.3 from BC, 76.7% from ST and 72.8% from RA [9].

The percentage of patients with detected deeper gingival pockets qualified for a comprehensive treatment (TN3) has amounted to 2.22% in our own study and in the reports from Katowice region – 8.89% [4]. High results of the discussed parameter (20%) have been observed in an adult group with diabetes in Finland [10]. In 2011 in nationwide studies deep pockets were observed in 16.6% of cases and in Lublin – 11.28% [7].

CONCLUSIONS

1. Over half of the population requires professional tooth cleaning for dental deposits removal and correcting defectively made fillings. These needs are statistically higher in rural areas.
2. It was concluded, that patients that regularly attended to dentist had better periodontal status, when compared to random patient groups.

REFERENCES

1. Iwanicka-Frankowska E, Wierzbicka M, et al. Stan zdrowia jamy ustnej polskiej populacji osób dorosłych w wieku 35-44 lat w latach 1998-2002. *Stomatol Współcz.* 2003;10(5): 9-15.
2. Banach J. Co z realizacją periodontologicznych celów zdrowia Światowej Organizacji Zdrowia do 2010 roku w Polsce? *Dent Med Probl.* 2002;39:9-12.
3. Jańczuk Z. Stan narządu żucia polskiej populacji. Szczecin: PAM; 1990.
4. Dąbal I, Koziaż A. Stan i potrzeby lecznicze przyzębia u osób 35-44 letnich z województwa katowickiego. *Czas Stomat.* 2000;LIII:2.
5. Iwanicka-Frankowska E, Wierzbicka M, Pierzynowska E, Kępa J. Stan przyzębia i potrzeby profilaktyczno-lecznicze grupy osób dorosłych z regionu Warszawy. *Nowa Stomatol.* 2003;3(25):148-51.
6. Jodkowska E. Stan uzębienia dorosłych mieszkańców Polski w latach 1988-2009. *Przegl Epidemiol.* 2010;64:571-6.
7. Górka R, Pietruska M, Dembowska E, et al. Częstość występowania chorób przyzębia u osób w wieku 35-44 lat w populacji dużych aglomeracji miejskich. *Dent Med Probl.* 2012;49(1):19-27.
8. Morris AJ, Steele J, White DA. The oral cleanliness and periodontal health of UK adults in 1998. *Br Dent J.* 2001;191(4):186-91.
9. Popowski W, Plakwicz P, Wiecek P, et al. Stan i potrzeby lecznicze przyzębia osób dorosłych w wieku 35-44 lat, zamieszkałych w regionie warszawskim – badania porównawcze. *Nowa stomatol.* 2001;4(18):38-41.
10. Karikoshi A, Murtomaa H. Periodontal treatment needs in a follow-up study among adults with diabetes in Finland. *Acta Odontol Scand.* 2003;61:7-10.

Corresponding author

Małgorzata Stodółkiewicz
Department of Functional Masticatory Disorders
7 Karmelicka Str., 20-081 Lublin, Poland
tel. 81 528-79-30
E-mail: zakladzaburzen@umlub.pl