

## EVALUATION OF MILLERS' DENTAL HEALTH. PART II. STATE OF THE PARODONTIUM

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**Abstract:** A study of the oral health of workers in flour mills was carried out. The examined group consisted of 40 males and 8 females currently employed at flour mills. As much as 97.92% of the workers showed evidence of parodontopathy. The results of the researches indicate the necessity of professional periodontal prophylaxis among mill workers.

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### INTRODUCTION

The workers of flour industry are exposed to a large extent to harmful factors of work environment: dustiness and unfavourable climatic conditions. Undoubtedly, dustiness is the most important factor and regarded as the most common reason for chronic diseases of the respiratory system [10]. Industrial dusts, both organic and inorganic, can also cause damage to parodontium – especially fine-grained dust, among which flour dust is included.

Flour dust has a varied composition. It includes particles of husk, cuticular hairs, pollen, starch grains, bacteria, mucus spore and particles of minerals origin (free silica) [7, 11]. Flour dust creates a sediment on the surface of teeth and gingivae, causing the increase of dental plaque and, in consequence, inflammation and overgrowth of gingivae, and teeth caries. The dust also causes damage to the hard tissue of teeth in the form of pathological abrasion, which can be the reason for the creation of traumatic nodes and overburdening of occlusion [1, 2]. It is one of the important etiological factors in the formation of periodontopathy. Respiration through the mouth in the dusty atmosphere can also lead

to the sensation of dryness in the mouth cavity, gingivae inflammation, and later on to serious and deep damage of the parodontium.

The aim of this study was an evaluation of the state of parodontium and the needs of periodontal treatment of the workers of flour mills.

### MATERIALS AND METHODS

Clinical examination of parodontium tissues was conducted among workers of flour mills in Lublin and its vicinity. Forty men and 8 women aged 20–53 were examined. During the examination, a periodontal WHO probe was used (Fig. 1). The probe ended with a ball (0.5 mm diameter) with a moving measuring part and with a black stripe indicating the depth of pocket ranging from 3.5–5.5 mm (Fig. 2). During the examination, the CPITN index (Community Periodontal Index of Treatment Needs) was used [6, 12]. The following codes of the CPITN index were used:

code 0 - healthy parodontium,  
code 1 - bleeding from gingival pocket during delicate probing,



Figure 1. A periodontal WHO probe.

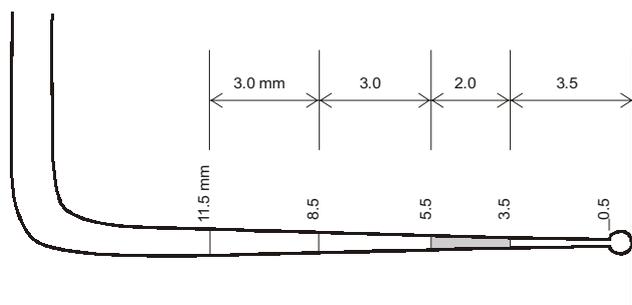


Figure 2. The end of the probe with marked scale. Adopted from [3].

code 2 - existence of calculus on the teeth over and under gingivae, depth of gingival pockets not bigger than 3 mm,

code 3 - depth of gingival pockets ranging from 4–5 mm,

code 4 - pockets depth is 6 mm or more,

code X - sextants excluded from examination (less than two teeth present).

The maximal value of the index from all the sextants allows for the following definition of categories of periodontal treatment needs:

TNO - patient does not show periodontal treatment needs (code 0 for all sextants).

TN1 - need for instructing the patient on oral cavity hygiene (code 1 at least for one sextant).

TN2 - need for professional removal of sediment and tartar from the surface of teeth, correction of filling and removing of all factors increasing plaque retention, instructing on oral cavity hygiene (code 2 or 3 at least for one sextant).

TN3 - need for complex professional periodontal treatment: surgical treatment, tooth extraction, scaling, instructing on oral cavity hygiene (code 4 at least for one sextant).

## RESULTS

The results of the examination are presented in Tables 1–3. On the basis of the results, it was stated that only 1 miller out of 48 examined had healthy parodontium (code 0 for all sextants – Tab. 1). Table 2 presents the sum of sextants labelled with code 0, 1, 2, 3 and X in maxilla and mandible, with gender taken into account. The table shows that the sum of healthy sextants among men was 39 in maxilla and 24 in mandible, and among women 6 in maxilla and 9 in mandible. The sum of sextants, in which bleeding from gingivae appeared during delicate probing

Table 1. Number ( $f_{x=0}$ ) of persons with healthy parodontium ( $x = 0$ ) in the examined group of millers.

Gender	No. of examined persons	$f_{(x=0)}$
Male	40	1
Female	8	0
Total	48	1

Table 2. Sum of sextants with code 0, 1, 2, 3 and X in the examined group of millers.

Gender	Examined persons	Maxilla	Mandible
	n	n	n
sextants with code 0			
Male	40	39	24
Female	8	6	9
sextants with code 1			
Male	40	9	8
Female	8	6	4
sextants with code 2			
Male	40	16	46
Female	8	4	7
sextants with code 3			
Male	40	38	28
Female	8	1	1
excluded sextants with code X			
Male	40	18	14
Female	8	7	3

Table 3. Categories of therapeutic needs (TN) of parodontium in the examined group of millers.

Gender	Category	Examined persons			Mandible	
		n	n	%	n	%
Male	TN0	40	9	22.5	1	2.5
	TN1		3	7.5	1	2.5
	TN2		26	65.0	38	95.0
Female	TN0	8	0	0	2	25.0
	TN1		2	25.0	0	0
	TN2		4	50.0	6	75.0
Total	TN0	48	9	18.75	3	6.25
	TN1		5	10.42	1	2.08
	TN2		30	62.50	44	91.67

in maxilla, was 15–9 in men and 6 in women, and in mandible 12 such sextants were observed - 8 in men and 4 in women. The sum of sextants, labelled with code 2 in the group of men was 16 in maxilla and 46 in mandible, in the group of women there were 4 sextants with code 2 in maxilla and 7 in mandible. The sum of sextants with deep pockets (code 3) was in men 38 in maxilla and 28 in mandible. In the group of women there was 1 sextant with code 3 in maxilla and 1 such sextant in mandible. No subjects with code 4 sextant recorded. The table shows also that 25 sextants excluded from examination (code X) were in the group of men and 17 in the group of women.

The analysis of periodontal treatment needs is presented in Table 3. Lack of treatment needs (TNO), as far as parodontium tissue in maxilla is concerned, was observed in 18.75% of persons, and in the case of mandible - 6.25%. The need for correcting oral cavity hygiene (TN1) in the examined group was noticed in 10.42% in maxilla and 2.08% in mandible. The need for professional removal of the sediment and calculus (TN2) from teeth appeared in the examined group among 62.5% in maxilla and 91.67% in mandible. The need for complex periodontal professional treatment (TN4) was not observed because there was no millers with code 4 sextant recorded.

### DISCUSSION

The examination shows an unfavourable situation regarding the state of parodontium of workers of the flour industry. In the examined group of millers, 47 out of 48 persons suffered from periodontal disease. The existing literature does not mention the state of parodontium of workers of the flour industry. However, it was noticed that many persons working in conditions similar to millers (unfavourable microclimate, high temperature, low humidity, high pollution) were also exposed to diseases of parodontium. The percentage of persons suffering from periodontopathy ranged from 65–98.3%. Similarly, in other branches of industry, many persons suffer from the diseases of parodontium: chemical industry 87%, production of artificial manure 75–100%, tobacco industry 81%, and aluminium-works 97% [4, 8, 9, 13]. An examination conducted in a cement plant indicated that illness of the parodontium was present among 98.43% of cases of examined persons, and even increased to 100% as a result of long working period [5]. In the group of workers of Danish Granite Industry the mean percentage of teeth with a healthy parodontium was only 6.8%. The percentages of teeth with gingivitis

without calculus, with gingivitis and calculus, and teeth with pockets deeper than 5 mm were 48.3, 31.5, and 13.4 percent, respectively [14]. Larsen [9] also observed gingivitis and periodontitis among people exposed to inorganic dust in the work environment. On the basis of literature it is clear that the frequency of existence of periodontopathy in different branches of industry differs and is connected with the influence of work environment.

### CONCLUSIONS

1. The conducted examination showed an unfavourable situation of state of the parodontium in the examined group of millers.
2. Conducting a professional prophylaxis among the workers of the flour industry is a necessity.
3. Complex prevention to maintain oral cavity health is recommended in cases of unfavourable work environment.

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