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# The condition of oral mucosa in the elderly (over 65 years) of Lublin

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### ABSTRACT

Mucous membrane defense mechanisms are impaired with age, both immunologically and physically. This decreases oral mucosa regenerative capability and results in greater susceptibility to injuries and microbial and fungal colonization. Pathological changes of the mucous membrane should be diagnosed and treated early, as some may develop into cancerous changes. Therefore, regular dental check-ups are essential, especially in old age. The aim of the study was to assess the condition of the oral mucosa in seniors residing in either Lublin Nursing Homes (LNH) or in home care. The study was conducted among 240 people over the age of 65: 117 LNH residents and 123 seniors living independently. The assessment of oral mucosa was conducted via clinical examination so as to see evidence of pathological change. On the base of the performed examination, pathological changes of the oral mucosa were observed in 43.59% of all LNH residents and in 34.96% of all seniors living in home care (independently). In both groups, atrophic glossitis, candidiasis (*in susp.*) and stomatitis prothetica were most frequently noted. Hence, it can be said that the condition of the oral mucosa of the examined seniors from Lublin is unsatisfactory.

### INTRODUCTION

Oral mucosa in the elderly undergoes extensive physiological changes. This is seen in the masticatory, lining and specialized mucosa. What is more, it becomes less elastic because of the decrease of elastic fibers, and it is thin, pale, dry, smooth, as well as poorly vascularized. Moreover, there is an increase in the number of collagen fibers and a decrease in the activity of acid and alkaline phosphatases. In addition, adipose tissue concentration in various parts of the mucous membrane is sometimes seen. Furthermore, 'palatal lipidophilia', a golden-yellow tint to the soft palate mucosa, is selectively evident. Senile epithelium is also more permeable for various harmful substances and more prone to mechanical injuries and the action of irritating agents with concurrent attenuation of wound healing processes. In addition, the susceptibility to microbial and fungal colonization of the epithelium increases with age. Both immunological and physical defense mechanisms of the mucous membrane are impaired, which decreases its regenerative capability and results in greater susceptibility to injuries. What is more, blood vessels of the oral mucosa are subject to regressive changes. They become delicate,

winding, frequently damaged with narrowing, dilations and arteriosclerotic changes [7,12,17].

**The aim** of the study was to assess the condition of oral mucosa in seniors (individuals of both sexes who are over the age of 65) residing in Lublin's Nursing Homes or in home care.

### MATERIAL AND METHODS

The study was conducted among 240 people aged 65 to 96-120 women and 120 men. The patients were placed within 2 groups: the first group included 117 residents of the Lublin Nursing Homes (LNH); the second group included 123 seniors in home care. The patients in both groups were also grouped according to age, two being distinguished: I – 65 to 74; II – over 75. Each group included 120 people. All people revealed that had good living conditions and had good mobility. All gave informed consent for carrying out the study, which was approved by The Ethics Committee of the Medical University of Lublin, Poland.

The appraisal of oral mucosa condition was by way of a clinical examination. This included assessment of normal oral mucosa and of degree of pathological change, including the presence of: oral candidiasis (*in susp.*) – patients with

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the suspected candidiasis were then referred for mycological examination; atrophic glossitis, prosthetic inflammation of the oral mucosa; black, furry tongue; scalloped tongue; sublingual varices; inflammation of the corners of the mouth.

The obtained study results were submitted to statistical analysis according to the place of residence, age and gender, and are presented in Tables 1-6.

## RESULTS

In the examined groups, the percentage of people who had pathological changes and the percentage of people with no changes were calculated (Tab. 1). Pathological changes of the oral mucosa were observed in 43.59% of all residents of Lublin Nursing Homes and in 34.96% of all seniors in home care. Statistically, no essential differences were evident in oral mucosa change between the investigated groups. However, oral mucosa degeneration was slightly more frequent among the LNH residents than in those in home care.

**Table 1.** Oral mucosa changes in the investigated groups as grouped by place of residence

Examined group	Yes	No	Total
	Number of persons %	Number of persons %	Number of persons %
Nursing homes	51	66	117
	43.59%	56.41%	100.00%
Family homes	43	80	123
	34.96%	65.04%	100.00%
Total	94	146	240
	39.17%	60.83%	100.00%

Statistical analysis:  $\chi^2=1,87$ ;  $p=0,17$

Statistical analysis has also revealed that in the LNH group, oral mucosa change occurred slightly more frequent in seniors over the age of 75 – 50.00% of all in the category, than in people aged 65-74 – 36.84% of the group total. These differences were not statistically significant (Tab. 2). Among the investigated in home care, oral mucosa change also occurred more frequently in people over the age of 75 – 45.00% of the group total, than in seniors aged 64-75 – 25.40% of the total (Tab. 3). Grouped by gender, no essential differences were stated in oral mucosa changes between women residents of LNH – 45.00% of the group total, and women in home care – 36.67% of the group total (Tab. 4). Similarly in men no statistically significant differences were seen in oral mucosa changes in LNH residents – 42.11% of the group total, and in home care residents – 33.33% (Tab. 5). Detailed studies revealed that in the LNH group, atrophic glossitis was more frequent – 49.02%, candidiasis (*in susp.*) less frequent – 19.61%, and far less frequent – prosthetic inflammation of the oral mucosa – 15.69%, inflammation of the corners of the mouth – 5.88%, black, furry tongue – 5.88%, scalloped tongue – 3.92%, and sublingual varices – 1.96%. Among seniors living in home care, 49.84% had atrophic glossitis, 25.58% had candidiasis (*in susp.*), 16.28% showed prosthetic inflammation of the oral mucosa, 9.30% evidenced sublingual varices and 4.65% revealed inflammation of the corners of the mouth (Tab. 6).

**Table 2.** Oral mucosa changes in nursing home residents, grouped by age

Age	Yes	No	Total
	Number of persons %	Number of persons %	Number of persons %
65-74 years	21	36	57
	36.84%	63.16%	100.00%
75 years and more	30	30	60
	50.00%	50.00%	100.00%
Total	51	66	117
	43.59%	56.41%	100.00%

Statistical analysis:  $\chi^2=2,06$ ;  $p=0,15$

**Table 3.** Oral mucosa changes in seniors living in home care (independently), grouped by age

Age	Yes	No	Total
	Number of persons %	Number of persons %	Number of persons %
65-74 years	16	47	63
	25.40%	74.60%	100.00%
75 years and more	27	33	60
	45.00%	55.00%	100.00%
Total	43	80	123
	34.96%	65.04%	100.00%

Statistical analysis:  $\chi^2=5,19$ ;  $p=0,02^*$

**Table 4.** Oral mucosa changes in women, grouped by place of residence

Examined group	Yes	No	Total
	Number of women %	Number of women %	Number of women %
Nursing homes	27	33	60
	45.00%	55.00%	100.00%
Family homes	22	38	60
	36.67%	63.33%	100.00%
Total	49	71	120
	40.83%	59.17%	100.00%

Statistical analysis:  $\chi^2=0,86$ ;  $p=0,35$

**Table 5.** Oral mucosa changes in men, grouped by place of residence

Examined group	Yes	No	Total
	Number of men %	Number of men %	Number of men %
Nursing homes	24	33	57
	42.11%	57.89%	100.00%
Family homes	21	42	63
	33.33%	66.67%	100.00%
Total	45	75	120
	37.50%	62.50%	100.00%

Statistical analysis:  $\chi^2=0,98$ ;  $p=0,32$

**Table 6.** Types of oral mucosa change, grouped by place of residence

Pathological changes	Nursing homes		Family homes	
	Number of persons	%	Number of persons	%
Candidiasis ( <i>in susp.</i> )	10	19.61%	11	25.58%
Prosthetic inflammation of oral mucosa	8	15.69%	7	16.28%
Atrophic glossitis	25	49.02%	21	48.84%
Black, furry tongue	3	5.88%	0	0.00%
Scalloped tongue	2	3.92%	0	0.00%
Sublingual varices	1	1.96%	4	9.30%
Inflammation of the corners of the mouth	3	5.88%	2	4.65%

## DISCUSSION

Older age predisposes individuals to the development of pathological changes in the oral mucosa. The factors that contribute to their development are common diseases and the medications for these, decreased salivary secretion, general weakening of the immune system and changes within the tissues [7].

Pathological changes of the oral mucosa were observed in 43.59% of all Lublin Nursing Homes residents. The results are comparable to those obtained from the residents of Nursing Homes from Zabrze and Opole, where the percentage was 47.4% and 43% respectively. In both Zabrze and Opole, atrophic glossitis was seen most frequently (61% and 58%, respectively, of the group total), while inflammation of the corners of the mouth, pressure ulcers, sublingual varices and leukoplakia occurred quite frequently [10].

With regard to residents of Warsaw Nursing Homes, a higher percentage of residents showed changes in the glossal mucosa, than did those in our own studies (91%). Scalloped tongue was also most frequently seen – 42% of the investigated, atrophic glossitis in 33%, superficial glossitis in 23%, furry tongue in 11%, sublingual varices in 6%, median rhomboid glossitis in 5% and geographic tongue in 2% [18]. Comparatively, among LNH residents, atrophic glossitis was observed in 49.02% of all examined, black, furry tongue in 5.88%, scalloped tongue in 3.92%, and sublingual varices in 1.96% of this study group.

Compared to our results, a lower percentage of seniors with oral mucosa change was noted in Wrocław Nursing Home residents (21% of the total), in Institutionalized Nursing Unit residents in Berlin, Germany (28.6%) [6], as well as in the residents of Old People's Homes in Hannover and in private medical practice patients in Lohne, Germany [3]. Comparative figures are available from studies of Nursing Homes residents in Australia (16.8%) [2], from Brazil (Taubaté) (19.5%) [11], as well from England (33% in Avon [4] and 40% in West Hertfordshire [15]) and Iran (45.6%) [14].

Regarding the use of dental prosthetics, prosthetic stomatopathies was noted very frequently among the residents of Nursing Homes in Szczecin and neighbouring environs who used removable dentures [16]. In our own studies, prosthetic inflammation of the oral mucosa was observed in 15.69% of all LHN seniors and in 16.28% of all home care seniors.

The longitudinal study by the Chair and Department of Conservative Dentistry of Jagiellonian University Medical College in Cracow of the state of the oral mucosa among Polish people treated between the years of 1961-1998 revealed that the most frequently occurring pathological changes were leukoplakia (18.03% of the investigated), inflammatory changes (including prosthetic inflammation) (15.34%), recurrent mouth ulcers (9.53%), stomatodynia (8.73%) as well as ulcerations (8.21% of the study population) [8]. A similar analysis was performed in the specialist outpatient department in Wrocław in the years 1992-2003. herein, in people over the age of 60, *candidiasis* prevailed (25% of the investigated), while burning mouth syndrome was also observed (21.7%), as was lichen planus (16.7%), leukoplakia (8.1%), post-traumatic changes (mainly

prosthetic stomatopathies) (7%) and recurrent mouth ulcers (4.3%) [9].

The state of the oral mucosa is the reflection of changes in the human body. Therefore, a thorough dental examination frequently allows for the revelation of systemic diseases [7,13]. Diseases of the mucous membrane should be diagnosed and treated early, as some may develop into cancerous changes [5,12,17]. Therefore, regular dental check-ups are essential, especially in institutionalized nursing units, where it is typical to see long-term use of damaged prosthetic restorations which have harmful effect on the oral cavity tissues. Moreover, in such institutes, the access to dental care is often quite limited.

## CONCLUSIONS

The condition of the oral mucosa of the examined seniors (aged over 65 years) from Lublin is unsatisfactory. Pathological changes in the oral mucosa were noted in nearly 40% of the test population, and was slightly more frequent in Lublin Nursing Homes residents than in people living independently in home care. In both groups, atrophic glossitis, candidiasis (*in susp.*) and *stomatitis prothetica* were most frequently noted.

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