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## Evaluation of Removable Dentures' Hygiene Level and Oral Cavity Mucous Membrane Condition Among Long-Term Care Houses Inhabitants in Wrocław\*

### Ocena stanu ruchomych uzupełnień protetycznych oraz stanu błony śluzowej podłoża protetycznego pensjonariuszy domów pomocy społecznej Wrocławia

SKN przy Katedrze i Zakładzie Protetyki Stomatologicznej AM we Wrocławiu  
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#### Abstract

**Background.** Appropriate dentures cleaning is essential to feel comfortable while wearing dentures and contributes to preserving oral cavity health. It prevents stomatitis, malodour and poor aesthetics caused by accumulation of denture plaque (which promotes bacteria and Candida-like fungi development).

**Objectives.** Evaluation of removable dentures hygiene level, condition of oral cavity mucous membrane and hygienic consciousness of long-term care houses inhabitants.

**Material and Methods.** 75 people being 44 to 97 years old. Dentures hygiene was evaluated in the case of 62 patients. 13 of them did not have or did not use dentures. Patients had been using 83 complete and 22 partial dentures. Dentures hygiene was evaluated with the use of Ambjornsen's index (dentures were submerged in basic fuxine solution for 30 seconds). Oral cavity status was evaluated with Newton's classification. The object of the analysis was also a questionnaire concerning problems of dentures hygiene.

**Results.** Time of dentures use varied from a few months to a couple of years. According to Ambjornsen's fuxine index 94% of examined dentures showed inappropriate hygiene and only 6% medium one. Despite such a poor hygiene, 79% of patients had no stomatitis symptoms (according to Newton's classification). Additionally, the questionnaire showed that majority of patients did not know principles of dentures and oral cavity hygiene. What should be stressed is the fact that 65% of the patients admitted that dentist had given them no information how to clean their dentures correctly. 35% of those who were given instructions, considered them insufficient. Patients were divided into 2 groups according to the type of dentures hygiene instructions they had been given: written (45%) or verbal (55%). After 1 month, hygiene level of both groups was evaluated again.

**Conclusions.** Hygiene level of examined dentures is highly insufficient, which can be the result of underestimating an importance of appropriate dentures hygiene instructions as an integral part of treatment. Significant improvement in dentures hygiene was observed after providing written instructions (**Dent. Med. Probl. 2005, 42, 3, 477–481**).

**Key words:** denture hygiene, instructions of hygiene.

#### Streszczenie

**Wprowadzenie.** Znajomość i przestrzeganie zasad higieny zapewnia komfort użytkowania uzupełnień protetycznych, przyczynia się do utrzymania zdrowia jamy ustnej oraz całego organizmu. Nieusunięta płytka protez jest pożywką dla bakterii oraz grzybów drożdżakopodobnych, które mogą być m.in. przyczyną stanów zapalnych jamy ustnej oraz przykrego zapachu z ust.

**Cel pracy.** Ocena higieny użytkowanych uzupełnień protetycznych, stanu błony śluzowej oraz świadomości higienicznej pensjonariuszy domów pomocy społecznej we Wrocławiu.

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**Materiał i metody.** Badano 75 osób w wieku 44–97 lat. Higienę protez oceniono u 62 spośród 75, pozostałe 13 osób nie miało bądź nie używało protez. Pacjenci użytkowali 83 protezy całkowite i 22 protezy częściowe. Podczas badania oceniano stan higieny protezy górnej za pomocą wskaźnika fuksynowego według Ambjornsen, po zanurzeniu na 30 sekund w roztworze fuksyny zasadowej. Stan błony śluzowej oceniano według klasyfikacji Newtona. Przeprowadzono również badanie ankietowe, w którym zwrócono uwagę na problem pielęgnacji protez.

**Wyniki.** Czas użytkowania protez wahał się od kilku miesięcy do kilkunastu lat. Według wskaźnika fuksynowego 94% badanych wykazywało złą higienę ruchomych uzupełnień protetycznych, a tylko 6% średnią. Mimo tak złego stanu higieny protez u 79% badanych nie stwierdzono zmian patologicznych na błonie śluzowej jamy ustnej. Autorzy opracowali własny kwestionariusz i przeprowadzili badania ankietowe. Wynika z nich, że większość pacjentów nie zna podstawowych zasad higieny jamy ustnej i uzupełnień protetycznych. 65% przyznało, że stomatolog wykonujący protezy nie udzielał żadnych informacji na temat pielęgnacji protez. 35% spośród pacjentów, którym takich informacji udzielono, uważa je za niewystarczające. W ramach przeprowadzonych badań udzielano pacjentom instruktażu w zakresie higieny protez. 45% pacjentów otrzymało instruktaż w formie pisemnej, 55% w formie ustnej. Po miesiącu ponownie zbadano wartości wskaźnika fuksynowego w obu grupach. W wybranych przypadkach zdecydowano się objąć badanych pacjentów leczeniem protetycznym w Katedrze i Zakładzie Protezyki Stomatologicznej Akademii Medycznej we Wrocławiu.

**Wnioski.** Stan higieny badanych protez jest zły, co może być pośrednio wynikiem niedoceniań przez lekarzy stomatologów roli właściwego instruktażu jako integralnej części leczenia protetycznego. Istotną poprawę higieny uzyskano po zastosowaniu instruktażu pisemnego (*Dent. Med. Probl.* 2005, 42, 3, 477–481).

**Słowa kluczowe:** higiena protez, instruktaż higieny.

Appropriate dentures cleaning is essential to feel comfortable while wearing dentures and contributes to preserving oral cavity health. It prevents stomatitis, malodour and poor aesthetics caused by accumulation of denture plaque (which promotes bacteria and Candida-like fungi development) [1–8]. Because of these facts, dentist should make patient aware how important proper hygiene is [1–10].

The objectives of this study were evaluation of removable dentures hygiene level, condition of oral cavity mucous membrane, hygienic consciousness of long-term care houses inhabitants. It was a starting point for an analysis of influence of correct instructions on hygiene level of removable dentures. Additionally, effectiveness of two types of instructions (written and verbal) were compared [4, 11–13].

## Material and Methods

Material consisted of 75 people, living in 4 long-term care houses in Wrocław, Poland, being 44 to 97 years old. 80% of them were women, 20% men.

Dentures' hygiene was evaluated in case of 62 patients. 13 of them did not have or did not use dentures. Patients had been using 83 complete and 22 partial dentures.

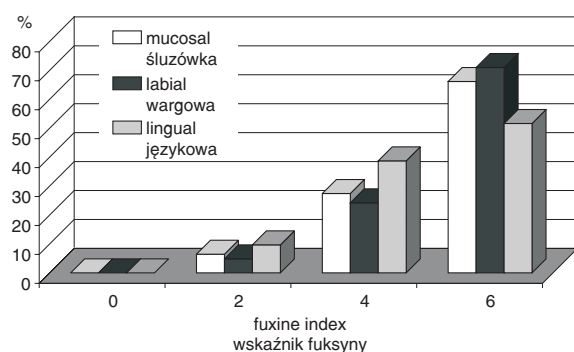
The research consisted of 2 parts: initial examination and re-examination. The object of the analysis was clinical examination and a questionnaire consisting of 21 questions concerning the methods used to keep dentures clean, various aspects influencing dentures condition and subjec-

tively evaluated patients' satisfaction. Oral cavity status was evaluated using OHI and Eichner's, Newton's, Supple's classifications. Dentures hygiene was evaluated using Ambjornsen's index (dentures were submerged in basic fuxine solution for 30 seconds) [acc. 4]. Patients were divided into 2 groups according to the type of dentures hygiene instructions they were given: written (45%) or verbal (55%). After 1 month, hygiene level of both groups was evaluated again.

## Results

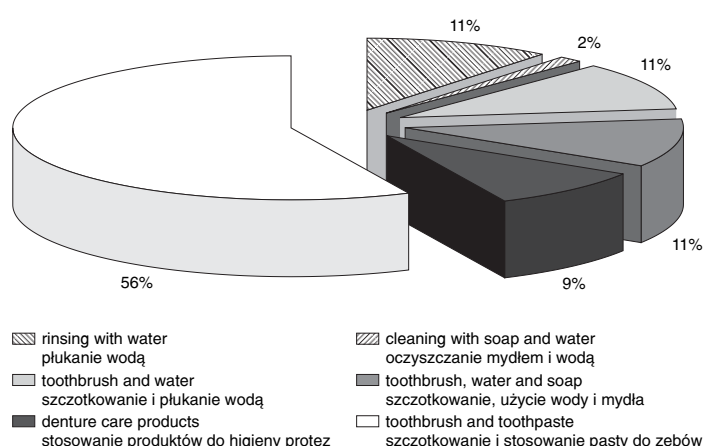
Time of dentures use varied from a few months to a couple of years. According to Ambjornsen's fuxine index 94% of examined dentures showed improper hygiene level and only 6% an average. An average index value was 5.1. The worst values were observed on labial surface (Fig. 1). Despite such a poor hygiene, 79% of patients had no stomatitis symptoms (according to Newton's classification). Questionnaire showed that every third of patients/one third of the patients covered whole costs of his/her dentures himself/herself, but there was no correlation between this fact and fuxine index values. 77% declared satisfaction with their dentures. 45% of patients had not visited their dentist after they had been given their dentures. It should be mentioned that there is no correlation between feeling pain and discomfort and visiting dentist. Moreover, 9% did make some modifications in their dentures themselves, without any dental consultation.

Additionally, the questionnaire showed that majority of patients did not know principles of



**Fig. 1.** Fuxine index values for different dentures surfaces

**Ryc. 1.** Wartości wskaźnika fuksynowego dla poszczególnych powierzchni protez



**Fig. 2.** Methods of dentures cleaning

**Ryc. 2.** Metody czyszczenia protez

dentures' and oral cavity's hygiene. The most commonly used methods of cleaning dentures were: 1) brushing using toothpaste – 57%, 2) brushing using soap – 11%, 3) brushing using only water – 11%, 4) rinsing with water – 11%, 5) brushing using special denture care products – 9%, 6) cleaning with soap, without using toothbrush – 2% (Fig. 2). What should be taken into consideration is the fact that only methods 2) and 5) are acceptable, which means that 80% of the patients clean their dentures improperly. No statistically significant correlation between frequency of cleaning and fuxine index values was observed. 45% clean dentures after meals, 55% without any relation to the meals. There was statistically significant difference between fuxine index for partial and complete dentures (it was 12% higher for partial dentures). It may result from the fact that 58% of the patients using partial dentures wear them 24 hours a day (while only 31% of those wearing complete dentures).

What should be underlined is the fact that 65% of the patients admitted that dentist gave them no information how to clean their dentures correctly. 35% of those who had been given instructions, considered them insufficient.

Re-evaluation of fuxine index in 2 groups proved that written instructions are more effective than verbal ones. The group which had been given verbal instructions showed no statistically significant difference in fuxine index values before and after they were given the instructions. Such difference occurred (*t* test,  $p < 0.05$ ) in case of the group which was given written instructions. The index was reduced by 17.6% after 1 month.

An integral part of the research was applying prosthetic treatment in the case of selected patients (in Department of Prosthodontics, Wrocław Medical University).

## Discussion

The fact that 65% of dentists did not give patients any dentures hygiene instructions is an object of authors' concern. 35% consider instructions they were given insufficient. Ineffective denture plaque removal may be the reason for stomatitis, pharyngitis and fetor ex ore, that leads to poor aesthetic effect and patient's dissatisfaction. That is why dentists should not neglect appropriate hygiene information. Patient should be aware that he/she is also partly responsible for the success of prosthetic treatment [14–17].

Basing on own observations, research analysis and literature, the authors made an attempt of presenting their own model of denture cleaning instructions [18–20]. Denture should be cleaned 2–3 times a day, using special denture cleaning brush or medium bristled toothbrush, possibly after meals. Cleaning procedure should last for 2–5 minutes and include all the surfaces (labial, lingual and mucosal). Special denture care products are the best option in denture cleaning. Alternatively an ordinary soap may be used. If there is no possibility of appropriate denture cleaning after meal, it should be rinsed with water to remove food remains. Dentures should also be disinfected (using special products, 3% hydrogen peroxide or other antiseptic) at least once a week. Denture should not be used 24 hours a day, because it causes more intensive plaque accumulation and faster alveolar bone hypotrophy. Thus, 6–8 hour break should be made during night or day. This time is necessary for the mucous membrane to regenerate. However, there are some exceptions from this rule – newly made denture should be used for 2–3 days, without any breaks, to achieve proper adaptation and incorporation. What is also worth taking into consideration is the

fact that using denture round the clock serves as arthropathies prophylaxis, because it contributes to appropriate occlusion and muscle tension reduction. Thus it is very important to conduct careful examination and make a decision which form will bring more benefits. Before night break, denture should be cleaned and then stored dry because it reduces the possibility of persistent denture colonisation by microorganisms. In case of stomatopathies, there should be made an exception and denture should be kept in antiseptic solution which eliminates the bacteria responsible for the pathologies and helps to cure them. Appropriate oral cavity hygiene should not also be neglected in case of toothless patients. Soft toothbrush massages and mouth antiseptics are recommended.

The research showed that written instructions were more effective than verbal. After a month, fuxine index was reduced by 17.6%. If one takes into consideration an average age in "written instructions" group (which is higher – 81 years,

while in "verbal instructions" group 74 years), the results cannot be an effect of eg. better physical or intellectual condition related to younger age. Moreover, in "written instructions" group, there was proportionally more dentures being more than 5 years old.

It can be controversial whether 17.6% improvement is satisfying or not. The group was re-examined after only 30 days which is quite optimistic and suggests the possibility of further betterment. Additionally, patients using dentures for a long time have their own hygienic habits that are difficult to eliminate (eg. brushing dentures using toothpaste, that causes abrasive destruction of denture surface and makes methods included in instructions ineffective). That is why appropriate information should be given together with first dentures. Dentures should be controlled periodically during dental visits and dentures cleaning instructions should be repeated if necessary.

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