

# Importance of Oral and Dental Health in the Elderly

*Chrudimská L.; Koutná K.*

*Faculty of Health Studies, University of Pardubice*

## Abstract

*Introduction:* Oral health has a significant impact on the overall health condition. Both the lay public and experts often underestimate this problem area. Apart from the health of the oral cavity itself and overall health, care for one's oral health improves overall quality of life. The condition of oral health in the elderly population is not at the desired level. To a great extent, oral health can be influenced by correct care. More attention should be paid to educating the population and the subjective area of self-care should not be underestimated.

*Objective:* The objective of the study was to point out the importance of oral health in the context of overall health and to present the condition of seniors' oral health as well as their interest in care for the oral cavity (including dentures).

*Method:* A research probe was used, with a combination of quantitative and qualitative techniques in the process of data collection and analysis. We used our own questionnaire and semi-structured interviewing. The total number of respondents was 36 in the quantitative part and 7 in the qualitative part. Respondents in both parts of the study were elderly persons – members of a selected senior club older than 65 years. Respondents' cognitive status was determined by means of the clock drawing test. The questionnaire data were processed using statistical software STATISTICA©.

*Results:* The oral health condition in the selected sample of seniors is lower than desirable. Seniors in the research sample have no complex knowledge in the area of dental and oral care although they are interested in it. They are not aware of the impact of oral health on the overall health condition.

*Conclusion:* The research probe implies that public awareness of this subject matter should be continuously and systematically increased. Multidisciplinary importance of oral health must be emphasized. An educational lesson was provided in the senior club and educational posters and leaflets were created in reaction to the results of the research probe.

**Keywords:** education, elderly people, knowledge, oral health, overall health

## Introduction

Oral health is a highly important factor affecting the overall health of an organism. Correct dental and oral care is an integral element of hygienic care. People often tend to give it less care than necessary and lack relevant information on how to correctly keep their oral cavity healthy and to what extent oral health impacts the overall health condition. Providing health in the oral area is a significant method of disease prevention in both soft and hard tissues. Multiplication of pathogenic microorganisms in the mouth and endotoxines produced by such microorganisms that may penetrate the human circulatory system may lead to the development of more serious illnesses in the entire organism. Furthermore, the substantial impact

of the condition of the oral cavity on the quality of life in terms of food ingestion, phonation, aesthetics and overall comfort must not be omitted (Mazánek et al., 2014).

Regular, effective and systematic reduction of plaque, which naturally grows in the mouth and may be a source of pathogens, plays a key role in maintaining oral health. According to Kovařová, Javorka a Dřízhal (2002), up to 98 percent of the population suffer from some form of gingivitis or parodontitis. Inflamed tissue around the tooth is a significant source of infection for the entire organism (Kovařová et al., 2002). An analysis of oral health in selected age groups of the population of the Czech Republic executed in 2003 revealed that the condition of oral health in the population was far from the desirable level in the context of overall health across all age categories. For instance, only 6.5 percent of the group of 18-year-old persons had intact permanent teeth and 57.7% needed treatment of at least one tooth (Broukal et al., 2004).

Preconditions for effective maintenance of oral health include: knowledge of correct tooth brushing technique, selection of suitable aids and, naturally, interest in care in this area. The vast majority of illnesses of hard and soft tissues in the oral cavity can be prevented by correct care (Mazánek et al., 2014).

The level of the required knowledge and the method of transmitting information differs across the various age stages of human life (Juřeniková, 2010). The motivation for research in this area is a question of whether the population shows sufficient interest in this problem area, to what extent the public is informed and of whether there are sufficient and appropriate sources of relevant information in the given area of care.

Every person should, in their own interest, be concerned about this problem area. Every healthcare professional should be able to make the patient aware of errors concerning their oral care, instruct them how to correct such errors and call their attention to the importance of this care in the context of overall health. Every healthcare professional should take the importance of oral health into consideration and refer the patient to a dental hygienist, in time. Successful treatment of the patient's overall disease cannot be expected if his or her body is exposed to numerous pathogens in the circulatory system, originating from the oral cavity. It is desirable to constantly increase the population's awareness of the importance of oral health and of how to maintain it. Numerous research studies confirm the overreaching impact of oral health on diseases such as diabetes mellitus (Duřková & Broukal, 2003) and mainly on the development of cardiovascular diseases, as revealed for instance by studies conducted by Haraszthy et al. (2000) or Kozarov et al. (2005). The likelihood of myocardial infarction is 1.5 to 2 times higher in patients with periodontitis than in the healthy population, the occurrence of stroke is even 2.8 times higher (Dřízhal, Prouzová & Úlehlová, 2012).

## **Objective**

The main aim of the present paper is to draw attention to the importance of oral health and the need to constantly increase the population's awareness of this problem area. Sufficient attention must be paid to the care of one's oral health, at any age. The present paper is specifically focused on the importance of dental and oral care in the elderly population. Its basis was a research study called "Oral Health in the Elderly", determining the respondents', elderly persons' interest in the care of their oral cavity and dental prostheses and determining oral health in the elderly in a selected sample of respondents.

## Methodology

The research probe was based on a quantitative and qualitative approach. The study sample consisted of respondents who were members of the Senior Club in the Pardubice Region and who had agreed to participate. The criteria for selecting the respondents included: age above 65 years and being successful in the cognitive test, regardless of their gender or level of education. Ethical acceptability of the study was approved by the faculty's ethical committee and prior to completing the forms, the respondents signed an informed consent. The data were collected using a questionnaire and interviews with seniors.

Data collection in the quantitative part of the study was done using own questionnaire. The questionnaire was developed based on research questions. Its final form was consulted with a dental hygiene specialist. The questionnaires were distributed to the respondents during one of the sessions of their Senior Club. The completion of the questionnaires containing 19 questions was completely anonymous and voluntary. The participants deposited the completed questionnaires into an identified and locked container. The questionnaire had been subjected to verification in a pilot study. A total of 36 completed questionnaires were used for participation in the research study. A so-called clock-drawing test, simple and reliable, was used for testing the respondents' cognitive function (Pokorná et al., 2013). In this test, the respondent is asked to draw the shape of a clock face and indicate a certain time on it – in this case 9:10 o'clock. This test preceded the first question in the questionnaire and its successful completion was a requirement for including the respondent in the study.

Another data collecting tool was a semi-structured interview with seven members of the Senior Club, who were willing to take part in it. All interviews were audio-recorded. The research probe took place from September to November 2016.

The questionnaire data were processed using statistical software STATISTICA©. Every question in the questionnaire was evaluated separately using descriptive statistics. Interviews were processed by transcription.

## Results

The quantitative part of the research probe determined several influential factors affecting oral cavity health such as the condition of hard and soft dental tissues, respecting the principles of correct dental care, attendance to preventive check-ups, etc. The respondents' oral health proved to be at an inferior level and did not correspond with the population's parameters (see Tab. 1). The respondents' knowledge indicated that the importance of oral hygiene is being underestimated (see discussion below).

Tab. 1 Number of own teeth (own survey)

Number of own teeth	Absolute frequency	Relative frequency in (%)
At least 20	6	16.67
9–19	14	38.89
8 and less	16	44.44
Total	36	100.00

In semi-structured interviews the respondents replied to the following three questions.

- What does “health in the oral cavity” mean to you?
- How does oral cavity health affect you when you eat food?
- What affects your care for your own oral cavity?

Responses, in a shortened form based on selected keywords, were recorded in a probe table (Tab. 2), demonstrating the attitudes of the sample of the elderly respondents towards their oral cavity care. Out of all the respondents, only one person had own teeth with no prosthetics, the remaining six persons used dentures. The present overview supplements the conclusions of the quantitative research part as discussed below.

Tab. 2 Selected responses from interviews (own survey)

Respondent	Gender	Dentures / Own teeth	Question		
			1	2	3
1	Female	Dentures	Complete teeth; ability to speak; eat; most crucial	Penetrates under my dentures; too tight; frequent brushing; nuts; poppy; cumin; hard food	Remember it; aesthetics
2	Female	Dentures	Very important; necessity; nice smile	Nothing bothers; flush after meals	Aesthetics; smell prevention; embarrassment when carrying out hygiene in the public
3	Male	Dentures	Means a lot	Movement of the dentures; releasing; fine-grained food; hard food; cutting	Forgetting
4	Female	Dentures	Means everything, it would hurt; poor look; smell	Discomfort; release; bruises; no meal is difficult	Takes longer; forgetting
5	Female	Dentures	Very important; it would hurt	Sometimes swollen gums; to cut; nuts	Frequent hygiene; embarrassment; forgetting
6	Female	Dentures	Very important; would look terrible; basis for food	Crushing; hard food	Embarrassment in the public
7	Male	Own teeth	Important; ability to eat	No problems	Avoiding delicacies

All seven respondents gave similar answers to the question what “health in oral cavity” meant to them. The ability to eat or speak is highly important to them; aesthetics, pain and fear from smell were also mentioned. None of the respondents mentioned that they considered oral health important for their overall health, as well. We may thus imply that the respondents were not aware of this important fact. This finding is alarming because, as mentioned above, numerous studies confirm a direct correlation of oral health and overall health.

The answers to the second question concerning the impact of oral health on food ingestion were more diverse. The one respondent with own teeth did not face any difficulties in this regard, which was expected, and this fact confirms that having one’s own teeth eliminates complaints related to food ingestion. Two respondents with dentures had no problem with any kind of food, the remaining four respondents reported issues mainly with hard food. They had to cut or crush such food. Two respondents further reported that fine-grained food (poppy, cumin) was causing difficulties because it got stuck under the prosthesis. Also, two respondents complained about the fact that their dentures moved and got loose while eating. Moreover, two respondents mentioned the necessity to perform frequent hygiene, especially after eating. The respondents’ statements indicate limited quality of life in terms of food ingestion.

The third question concerned the impact on the care for one’s own oral cavity. The most frequently mentioned issue was forgetting about regular care. It was mentioned, for instance, that respondents did not remove their dentures from their mouth for the night. Three respondents mentioned embarrassment due to care for their dentures in the public or at home. Two respondents mentioned aesthetic aspects; one senior was concerned about bad breath. There were two complaints stating that care for one’s own dentures was time-consuming, and the respondent with his own teeth avoids eating delicacies because he has concerns.

## **Discussion**

A total of 17% of the respondents reported that they had at least 20 own teeth. A 2003 oral health analysis states that the Czech population includes 25% of persons above 65 years of age with at least 20 own teeth without indication for extraction (Broukal et al., 2004). That implies that our study population included respondents with a below-average proportion of persons having at least 20 own teeth. Contrariwise, as many as 44% of our study participants selected an answer that indicated that they had 8 own teeth, at most (Tab. 1). This figure is relatively high and it can be assumed that a significant decline in the number of own teeth is not only due to degenerative changes caused by the respondents’ age but their life-long quality of care for their own teeth and the oral cavity must be mentioned as it is a key factor for oral health (Dostálová & Seydlová, 2008). A high percentage of respondents with a low number of own teeth supports the assumption that these people need a certain form of dental prosthesis. This is confirmed by the fact that even 80% of the respondents in our research sample reported that they actually did use some form of dental prosthesis. Broukal et al. (2004) states that in 2003, 23.1% of the population above 65 years used a partial removable prosthesis for the upper jaw and 32.9% for the lower jaw. 37% had a total dental prosthesis for the upper jaw and 22.1% for the lower jaw (Broukal et al., 2004).

The research study further addressed the condition of soft tissues in the oral cavity. Periodontal inflammation (periodontitis) manifests itself by gum bleeding and swelling, progressively deepening periodontal pockets and alveolar bone resorption. More than 60% of the respondents reported no issues with exposed tooth necks. Almost 70% of the respondents reported no reddish or swollen gums. However, it is disputable if the respondents are able to

critically assess the condition of their own periodontium. Around one third of the respondents mentioned complaints about painful gums and bad breath. This might imply periodontal impairment. Dřížhal, Prouzová and Úlehlová (2012) state that periodontitis is a very frequent disease of the oral cavity. In Central Europe, 40-50 percent of teeth with impaired periodontium are indicated for extraction. The most frequent cause of the development of this disease is incorrect care for the oral cavity. The international Community Periodontal Index (CPI) provides the most objective assessment of the periodontal condition (note: CPI = 0 indicates healthy periodontium, CPI = 3 periodontal pockets up to 3.5–5.5 mm and CPI = 4 periodontal pockets deeper than 5.5 mm). The national analysis of the dental condition implies that in the population above 65 years of age, 32.6% have CPI = 3 and 10.4% have CPI = 4 (Broukal et al., 2004). Such relatively high occurrence of periodontal impairment of soft oral tissues might indicate insufficient care for the oral cavity, which is closely related to this problem area, as mentioned above. Our study is limited by the absence of an objective assessment of the periodontium's actual condition using the CPI.

The following results were obtained in terms of the level of the elderly persons' care for their teeth and the oral cavity: most frequently, the respondents reported that they cared for their oral health twice a day for around 3 to 4 minutes. Since in oral care it is vital what aids are used, the respondents were enquired also about this area of care. Table 3 shows that all respondents used classical mechanical tooth brush. Only 14 percent used interdental brush, which occupies an irreplaceable position in dental care, even if the oral cavity includes only one single interdental space or a fixed dental prosthesis. Toothpaste, mouthwash or cleaning tablets for dentures were mentioned as the most frequent dental care accessories.

Tab. 3 Table of response frequencies - care aids (own survey)

Aid	Frequency of responses	Relative frequency of responses (%)
Toothpaste	33	91.67
Toothbrush	36	100.00
Interdental brush	5	13.89
Single-tuft toothbrush	2	5.56
Dental floss	6	16.67
Mouthwash	16	44.44
Fluoridating agent	2	5.56
Cleaning tablets for dentures	17	47.22
Others	2	5.56

The results of the quantitative part of the research study further imply that over 40% of the respondents do not have preventive dental check-ups twice a year. A patient is entitled to a preventive check-up by his/her stomatologist twice a year. Dental prevention is crucial for maintaining healthy and functioning teeth as long as possible. Timely detection of potential issues in the oral cavity considerably improves the prognosis of any disease in this area. A research conducted by Orbit shows that 66% of patients visit their dentist for preventive checks twice a year (Orbit klub, 2012). The Stomatologist's competences include an examination and care of the oral area as well as educating patients about correct care for their teeth and oral cavity, or the dentist should recommend the patient to see a dental hygienist.

A total of 44% of the respondents subjectively did not feel well informed about the problem area of care for their oral cavity, teeth and/or dental prosthesis. On the other hand, the

respondents are interested in new information on the topic of oral care and find their oral health important. This is mainly the case in terms of food ingestion, phonation and aesthetics.

The respondents most frequently gain information on care and oral health from their stomatologist. The media, other persons and educational materials were mentioned as other sources of information. This leads to questions about the relevancy of the resources the respondents use because non-certified resources give reasons for doubts about the quality of information. Due to the overreaching impact of oral health on one's overall health, preventive checks at the general practitioner's office and by other specialists should be considered as significant sources of information, as well. Further research might be stimulated by efforts to find out if healthcare professionals are, in general, concerned about the condition of their patients' oral cavity and teeth and if they are able to provide them with information on this issue.

The results of the qualitative part of the research study correspond with the results of the quantitative part of the survey.

The entire research probe was limited mainly by the fact that the sample of respondents was not representative and also by its generic focus, not involving an evaluation of the data obtained by means of an objective examination of the oral cavity. However, the present probe provides a brief insight into the area of oral care in seniors and gives inspiration for further research.

## **Conclusion**

The research probe showed that elderly persons in the selected sample are lacking correct information on how to care for their oral cavity and teeth. They are not aware of the overreaching impact of oral health on their overall health. Subjectively, they do not feel sufficiently informed about this problem area although they are keen on receiving such information. Also, the condition of their oral health showed certain shortcomings. Data from future research surveys with the same subject should additionally include objective indicators of the condition of the teeth and the oral cavity. Another finding was that a relatively high percentage of the respondents do not regularly visit their stomatologist for preventive checks.

Since oral health influences the overall health condition, it would be desirable to constantly and systematically increase public awareness of the care for own teeth and the oral cavity. It is also important that they obtain information from relevant sources. The fundamental source of information is the stomatologist and dental hygienist. Other primary care physicians should also be able to inform their patients about this problem area and should not omit it in the context of their overall health. Experts should be urged to pay more attention to education on oral health. Other research surveys should be focused on this problem area. Increasing the population's awareness in the area of dental care is beneficial for preventing oral cavity diseases with overreaching positive impact on overall health, reducing related complications, which ultimately reduces care costs. Last but not least, it is worth mentioning that oral health plays a significant role in one's quality of life.

In reaction to the identified shortcomings, a practical outcome of the probe was the creation of an educational material in the form of posters and flyers containing all the important information on dental and oral care. Also, an educational session was held at the Senior Club and other sessions are planned. Approaching other similar community facilities should be considered in order to make public education as effective as possible.

*The research survey was conducted as part of the Student Grant Competition of the University of Pardubice No. SGS\_2016\_005 Quality of Care at Healthcare Facilities 2016.*

## **Bibliography**

- Broukal, Z., et al. (2004). *Analýza orálního zdraví vybraných věkových skupin obyvatel České republiky 2003*. Praha: VÚS & ÚZIS ČR.
- Dostálová, T., Seydlová, M., et al. (2008). *Stomatologie*. Praha: Grada Publishing.
- Dřížhal, I., Prouzová, K., & Úlehlová, J. (2012). Parodontitida – jak ji poznat a léčit. *Praktické lékařství*, 8 (4), 164–166.
- Dřížhal, I., & Slezák, R. (1993). *Základy parodontologie*. Praha: Univerzita Karlova, Karolinum.
- Dušková, J., & Broukal, Z. (2003). Vztah onemocnění parodontu a diabetu – metaanalýza výsledků průřezových a intervenčních studií. *Česká Stomatologie*, 84 (10), 63–77.
- Haraszthy, V. I., Zambon, J. J., Trevisan, M., Zeid, M., & Genco, R. J. (2000). Identification of periodontal pathogens in atherosclerotic plaques. *Periodontol*, 71, 1554–1560.
- Juřeniková, E. (2010). *Zásady edukace v ošetrovatelské praxi*. Praha: Grada Publishing.
- Kovařová, E., & Čierny, M. (2006). *Orální hygiena I*. Prešov: Akcent print.
- Kovařová, E., Javorka, V., & Dřížhal, I. (2002). Časová náročnosť hygienickej fázy a recall u stomatologického pacienta. *Stomatológ*, XII, 2-6.
- Kozarov, E. V., Dorn, B. R., Shelburne, C. E., Dunn, W. A., & Progulske-Fox, A. (2005). Human atherosclerotic plaque contains viable invasive *Actinobacillus actinomycetemcomitans* and *Porphyromonas gingivalis*. *Arteriosclerosis, Thrombosis, and Vascular Biology*, 25, 17–18.
- Mazánek, J., et al. (2014). *Zubní lékařství propedeutika*. Praha: Grada Publishing.
- Orbitklub (2012). *Zubní poradna*. Available at <http://www.orbitklub.cz/tiskove-zpravy/lepsime-se-v-peci-o-zuby-na-pravidelne-prohlidky-uz-chodi-23-cechu/>.
- Pokorná, A., et al. (2013). *Ošetrovatelství v geriatrii: Hodnotící nástroje*. Praha: Grada Publishing.
- Slezák, R. (2007). *Preklinická parodontologie*. Hradec Králové: Nucleus HK.

**Mgr. Lucie Chrudimská, DiS.**

Faculty of Health Studies, University of Pardubice  
Lucie.Chrudimska@upce.cz

**Bc. Kateřina Koutná**

Faculty of Health Studies, University of Pardubice  
Katerina.Koutna@student.upce.cz