



## Caregivers' attitudes, knowledge and practices of oral care at nursing homes in Serbia

Stavovi, znanje i praksa negovatelja u održavanju oralnog zdravlja korisnika domova za stara lica u Srbiji

Ivica Stančić\*, Miloš Petrović\*, Aleksandra Popovac\*, Miroslav Vasović<sup>†</sup>,  
Nebojša Despotović<sup>‡</sup>

\*Department of Prosthodontics, Faculty of Dental Medicine, University of Belgrade, Belgrade, Serbia; <sup>†</sup>Faculty of Medical Sciences, University of Kragujevac, Kragujevac, Serbia; <sup>‡</sup>Gerontology Department, Clinical Center Zvezdara, Belgrade, Serbia

### Abstract

**Background/Aim.** Within the elderly population, residents in nursing homes, there is a greater risk of caries, periodontal disease and teeth loss. Assistance of caregivers in maintaining good oral hygiene besides improving oral health can improve of residents general health and the quality of their lives. The aim of this study was to examine the attitudes of caregivers and knowledge about oral health, as well as the practice regarding oral care they apply at nursing homes in Serbia. **Methods.** The survey was conducted at the Gerontology Center Belgrade, consisting of four nursing homes located in the urban area. The study included 58 caregivers. They were contacted on working days, in all work shifts, during January, February and March of 2013. They were asked to fill in a self-administered questionnaire consisting of 26 closed-type questions. **Results.** The caregivers mostly considered that it was very important to take care of oral health of the residents, but 69% responded that the level of their oral health was low or very low. As the main barriers to oral hygiene maintenance, the caregivers indicated lack of time. The caregivers had more knowledge about periodontal disease than about the main cause of caries and its prevention. Formal medical education had the influence on the knowledge about oral diseases. Oral hygiene procedures carried out by the majority of caregivers were denture cleaning and tooth brushing. **Conclusion.** The caregivers were aware of the limitations in everyday oral care of nursing homes residents in Serbia, although solving these problems requires the involvement of the entire public health service.

### Key words:

old age assistance; homes for the aged; oral hygiene; comprehensive dental care; serbia.

### Apstrakt

**Uvod/Cilj.** U grupi starijih osoba, stanovnika domova za stara lica, postoji povećani rizik od nastanka karijesa, periodontalne bolesti i gubitka zuba. Pomoć u održavanju dobre oralne higijene, pored toga, može uticati i na opšte zdravstveno stanje i kvalitet života stanovnika domova za stara lica. Cilj ovog istraživanja bio je da se ispitaju stavovi i znanje negovatelja o oralnom zdravlju, kao i praksa koju primjenjuju u domovima za stara lica u Srbiji. **Metode.** Istraživanje je sprovedeno u ustanovi Gerontološki Centar Beograd, koji se sastoji od četiri doma za stara lica, locirana u urbanom području. U istraživanju je učestvovalo 58 negovatelja, s kojima smo kontaktirali radnim danima, u svim radnim smenama, tokom januara, februara i marta 2013. godine. Oni su zamoljeni da samostalno ispune upitnik sastavljen od 26 pitanja zatvorenog tipa. **Rezultati.** Negovatelji uglavnom smatraju da je veoma važno brinuti se o oralnom zdravlju korisnika domova, ali 69% je odgovorilo da je nivo oralnog zdravlja korisnika nizak ili vrlo nizak. Za glavnu prepreku u održavanju oralne higijene korisnika domova, negovatelji su označili nedostatak vremena. Negovatelji su imali više znanja o parodontalnim bolestima, nego o glavnom uzročniku karijesa i njegovoj prevenciji. Formalno medicinsko obrazovanje imalo je uticaj na njihovo znanje o oralnim bolestima. Čišćenje proteza i pranje zuba su najčešće primenjivani postupci negovatelja u održavanju oralne higijene korisnika domova. **Zaključak.** Negovatelji su svesni ograničenja u svakodnevnom održavanju oralnog zdravlja korisnika domova za stara lica u Srbiji, kao i da rešavanje tih problema zahteva uključivanje celokupnog javnog zdravstvenog sektora.

### Ključne reči:

stare osobe, pomoć; starački domovi; usta, higijena; zubi, nega i lečenje; srbija.

## Introduction

An increasing number of older people and their needs for health care is a challenge for public health services, including oral health care<sup>1</sup>. Within the elderly population there is a greater risk of caries, periodontal disease and teeth loss, especially among functionally dependant and cognitively impaired residents at nursing homes<sup>2</sup>. Poor oral health of nursing home residents is mostly the result of the absence or difficult access to the professional dental care, lack of motivation, difficulties in motor skills and poor medical status of nursing homes residents, but also inadequate practice and the attitude of caregivers<sup>3</sup>. Oral disease in institutional facilities can affect residents' systemic health<sup>2</sup>. Bacterial endocarditis, pneumonia and pulmonary abscess can be the result of the anaerobic bacteria infection; the dental plaque is the source of these bacteria, especially in patients with periodontal disease<sup>4,5</sup>. Therefore, assistance in maintaining good oral hygiene besides improving oral health can also improve residents' general health and the quality of life<sup>6</sup>.

Numerous studies have shown that lack of time, the absence of organizational support, fear of performing oral care, lack of cooperation and interest in oral care of the residents are the main problems of caregivers in preserving oral health care at nursing homes<sup>7-14</sup>. As a conclusion of those studies, the authors indicate that the improvement of caregivers' education and training programmes in this field are necessary<sup>1</sup>. There are no relevant data in Serbia about oral health care in nursing homes for elderly.

The assessment of the attitudes of caregivers regarding oral health is very important, considering the fact that they have direct influence on the effect of oral care of the residents<sup>1</sup>. It can provide insight into their priorities and thus into oral care practices at nursing homes.

The aim of this study was to examine the attitudes of caregivers and their knowledge about oral health, as well as the practice regarding oral care they apply at nursing homes in Serbia.

## Methods

### Study sample

The study was conducted at the Gerontology Center Belgrade, consisting of four nursing homes located in the urban area. This institution has the capacity of nearly 1,200 residents, with 113 caregivers. The study included 58 out of 113 caregivers, with the response rate of 51%. The caregivers were contacted on working days, in all work shifts, du-

ring January, February and March of 2013. The criterion for inclusion in the study was permanent employment in the Gerontology Center and voluntar participation to the study. The protocol for this study was approved by the local ethics committee (No. 36/31) at the Faculty of Dental Medicine, University of Belgrade.

### Questionnaire

The survey was conducted using the self-administered questionnaire consisting of 26 closed-type questions. The questionnaire was designed to provide information on demographic characteristics of caregivers, caregivers profession and training in oral care, attitudes towards oral health care of nursing homes residents, practices applied in relation to providing oral health care, knowledge of aetiology and manifestation of oral diseases, and caregivers knowledge of denture hygiene.

### Statistical analysis

The obtained data were analysed using descriptive statistics in the Statistic Software SPSS (version 11.5 for Windows, SPPS Inc., Chicago, IL, USA). Categorical data were compared using the  $\chi^2$ -test and Mann-Whitney test for between-group differences. A statistical significance was determined at  $p = 0.05$  for all tests.

## Results

The study included 58 caregivers (5 men and 53 women), with the mean age of 43.9. Significantly more caregivers had no formal medical education (70.7%,  $p < 0.05$ ). Most of the caregivers (84.5%) were responsible for over 20 residents, while 15.5% were responsible for 15–20 residents. The majority of the caregivers (37.9%) had over 20 years of experience in working with the elderly.

Training in assisting residents in maintaining oral hygiene passed 81% of the respondents. Training in causes, course and prevention of oral diseases passed 36.2% of the caregivers, out of whom 78% considered it useful in practice. Most caregivers had learned oral hygiene techniques from colleagues (41.4%). Also, most of them (96.6%) considered that it was very important to take care of residents' oral health. When asked to evaluate the level of residents' oral health, 69% responded as low or very low. Lack of time of the caregivers was indicated as the main barrier to oral hygiene maintenance (Figure 1).

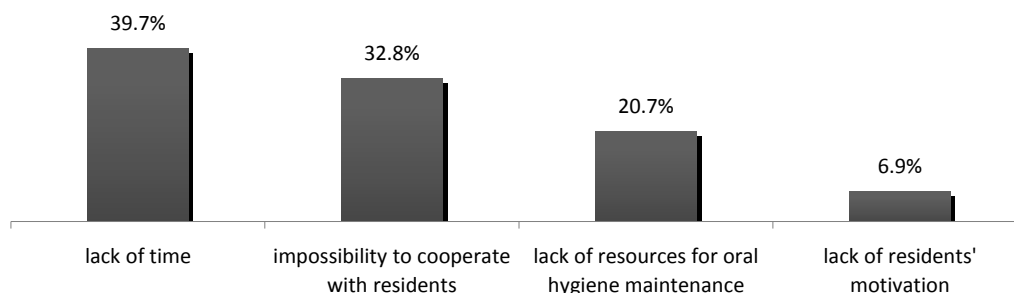


Fig. 1 – Main barriers to maintaining oral hygiene of the residents.

When it comes to oral hygiene procedures which the caregivers apply to the residents, most of them applied only denture cleaning, while significantly fewer rinsing with oral solutions (Figure 2). A total of 79.3% of the caregivers carried out oral hygiene procedures once a day, 8.6% 2–3 times a week, while 12.1% of the caregivers did not carry any oral hygiene procedure.

The knowledge of caregivers on the symptoms and prevention of caries and periodontal disease is shown in Table 1. As a possible cause of dental caries, most caregivers reported poor oral hygiene. Also, most of them answered that tooth decay could be best prevented by regular brushing and visits to the dentist. As the main cause of gum disease, they considered bacteria in dental plaque with swollen gums that easily bleed to gentle wash as the main symptom.

Comparing the responses to the question about the possible causes of tooth decay among the staff with and without formal medical education (FME), there was a statistically si-

gnificant difference in the answers "Poor oral hygiene" and "Lack of calcium in the diet" (Table 2). Also, in the question about dental caries prevention, a statistically significant difference was observed in the response "Regular dental exams" (Table 2). Regarding oral hygiene procedures, there was a statistically significant difference ( $p < 0.05$ ) in the responses "Cleaning dentures" and "None of the above", between respondents who had received oral care training and those who did not (Table 3).

Most of the respondents (81%) answered that the best way to clean dentures was the use of a toothbrush, toothpaste and soaking in a denture cleanser, and 79.3% answered that dentures should be kept in water when they were not in the mouth. In addition, most of the caregivers (77.6%) considered that dentures should not be left in the mouth at night, and 72.4% stated that broken dentures could be repaired. Most respondents (81%) agreed that prostheses should be cleaned at least once a day and washed after each meal.

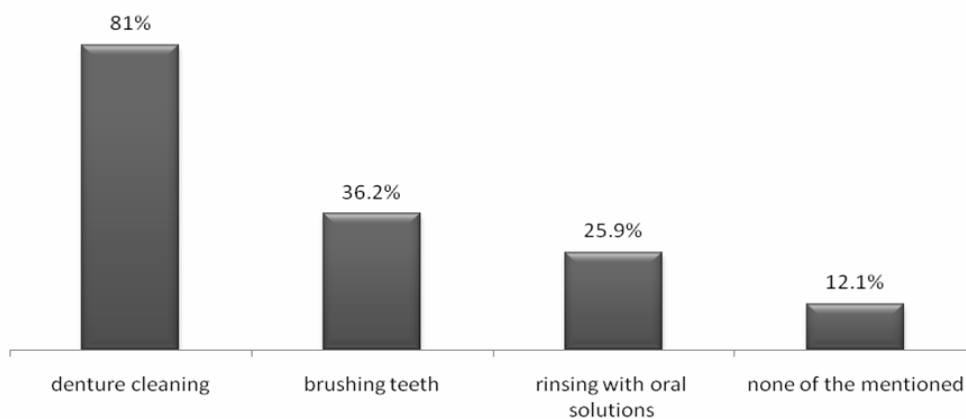


Fig. 2 – Procedures that the caregivers apply to maintain oral hygiene of the residents.

**Table 1**  
**Caregivers' knowledge of symptoms and prevention of caries and periodontal disease**

Questions on oral health	Caregivers' responses, n (%)
Aetiology of dental caries	
poor oral hygiene	43 (74.1)
frequent intake of sugary food and drinks	29 (50.0)
lack of calcium in the diet	27 (46.6)
Prevention of dental caries	
regular brushing and regular dental check-ups	41 (70.7)
restricted intake of sugary food and drinks	17 (29.3)
using the oral solutions with fluoride	18 (31.0)
Signs and symptoms of gum disease	
bad breath	36 (62.1)
swollen gums which bleed easily on gentle brushing	45 (77.6)
loose teeth	35 (60.3)
the space between the teeth	4 (6.9)
sensitive teeth	14 (24.1)
holes in teeth	12 (20.7)
The main cause of gum disease	
bacteria in dental plaque	46 (79.3)
sugar in sweet food and drinks	14 (24.1)
poor nutrition	15 (29.5)

**Table 2**  
**Comparison of the responses given by the caregivers with and without formal medical education (FME)**

Questions on oral health	Caregivers without FME	Caregivers with FME	$\chi^2$ -test ( <i>p</i> )
	n (%)	n (%)	
Aetiology of dental caries			
poor oral hygiene	27 (65.9)	16 (94.1)	0.025
frequent intake of sugary food and drinks	22 (53.7)	7 (41.2)	0.387
lack of calcium in the diet	23 (56.1)	4 (23.5)	0.024
Prevention of dental caries			
regular brushing	29 (70.7)	12 (70.69)	0.991
restricted diet of sugary food and drinks	14 (34.1)	3 (17.6)	0.209
using the oral solutions with fluoride	13 (31.7)	5 (29.4)	0.863
regular dental check-ups	25 (61.0)	16 (94.1)	0.012
The main cause of gum disease			
sugar in sweet food and drinks	8 (19.5)	6 (35.3)	0.201
bacteria in dental plaque	33 (80.5)	13 (76.5)	0.731
poor nutrition	8 (19.5)	7 (41.2)	0.086

**Table 3**  
**Comparison of the applied procedures by the caregivers with and with no oral care training**

Procedures for maintaining oral hygiene	Caregivers with oral care training, n (%)		$\chi^2$ -test ( <i>p</i> )
	yes	no	
Brushing teeth	19 (40.4)	2 (18.2)	0.167
Using the oral solutions with fluoride	14 (29.8)	1 (9.1)	0.158
Dentures cleaning	41 (87.2)	6 (54.5)	0.013
None of the mentioned	3 (6.4)	4 (36.4)	0.006

## Discussion

The limitation of the study derives from its descriptive nature, but the results are nonetheless very significant, given that similar studies have not been conducted in Serbia. Regarding the response rates, other studies in similar contexts showed the response rate of 25%<sup>15</sup> and 75%<sup>16</sup> of the sample. In this study, the response rate was 51%. Obtaining a higher response rate is difficult due to high staff turnover, sick leave and scheduling. Most of the caregivers who participated in this study were women, that coincided with the results of other studies<sup>1</sup>.

Oral care training had been attended by 81% of the study participants and almost the same percentage considered it useful in everyday practice. However, what remains as a main problem is the absence of protocols and standards which would institute these courses and trainings as one of the priorities in nursing homes and an obligation for every staff member.

The study showed that almost all the staff members had a positive attitude towards the importance of oral hygiene in nursing homes, which is very encouraging, since they are dentists' partners in achieving mutual aim, namely oral health improvement for nursing homes residents. However, the fact that nearly two-thirds of caregivers consider the current state of residents' oral health as bad or really bad, reporting lack of time as the main problem that prevents them from

dedicating more time to oral care, raises a huge concern. This is in contrast with the results from other studies, where the impossibility of cooperation with nursing homes residents<sup>17</sup> or the lack of residents' will<sup>18</sup> is stated as the main barrier. In addition to lack of time, a great number of residents have the same caregiver during the one work shift.

The nursing home staff had more knowledge about periodontal disease than about the main cause of caries and its prevention, is the same as in other studies<sup>5</sup>.

The results showed that FME influenced the knowledge about oral diseases. The majority of caregivers with FME (94.1%) said that "poor oral hygiene" was a possible cause of caries, and for caregivers without FME the number was slightly lower (65.9%). In contrast to that, 23.5% of caregivers with FME responded positively to the given answer "The lack of calcium in nutrition", compared to more caregivers (56.1%) without FME who answered positively, which shows that the staff with FME was more informed about the causes of oral diseases. The fact that 94.1% of caregivers with FME stated that caries might be prevented by regular dentist check compared to 61.0% of caregivers without FME who answered the same supports this conclusion. Such results indicate that staff with FME is able to take better care of oral health of nursing home residents and that additional training in oral diseases is necessary for caregivers without medical and/or dental education.

Regarding knowledge about denture hygiene, caregivers showed a high level of information, mostly gained through their practical experience.

Oral hygiene procedures carried out by most caregivers are dentures cleaning (81%) and tooth brushing (36.2%). The concerning fact is that, in contrast to other studies<sup>1</sup>, our study showed that there is a number of staff (12.1%) who did not apply any procedure in order to maintain oral hygiene of nursing homes residents. However, this information does not have to be strictly negative, since it may be the result of the presence of functionally independent residents who do not need help in maintaining oral hygiene.

Several studies highlight oral health care as an important part of elderly health care<sup>19,20</sup>. Furthermore, they show that nursing homes are responsible for the help in residents everyday oral hygiene maintenance, but when countries in economic transition are concerned, there are very few data considering this topic. In developing countries, caregivers lack of education is common, and this particularly refers to those working in geriatric centers<sup>21</sup>. A study<sup>22</sup> shows how much dental teams contribute to supporting and encouraging a nursing home staff in maintaining continuous oral health care. Also, previous studies have shown a significant impro-

vement in staff's attitudes and approaches towards oral health care after a short educational program for nursing attendants<sup>23-26</sup>. More quality training may provide better oral care, but there are few studies describing these effects<sup>27</sup>. Some studies<sup>28,29</sup> show that skills of caregivers at nursing homes in providing oral care are improved several months after an oral care training course, but they have not succeeded in showing the influence on the residents' oral health.

### Conclusion

It is important that nursing attendants are aware of the main barriers and problems in everyday oral care of nursing homes residents in Serbia, although solving these problems is complex and requires the involvement of the entire public health service. The lack of time, as the main obstacle in maintaining residents' oral health, may be solved with better staff organization, as well as with providing more caregivers in order to relieve the current staff from numerous obligations. Dental profession has to emphasize the importance of oral hygiene and of educating the nursing home staff in order to improve oral health care at nursing homes.

### R E F E R E N C E S

1. *Urrutia CG, Ormazábal FR, Santander IE, Salvo DM.* Oral health practices and beliefs among caregivers of the dependent elderly. *Gerodontology* 2011; 29(2): 742-7.
2. *Yoon MN, Steele CM.* Health care professionals' perspectives on oral care for long-term care residents: Nursing staff, speech-language pathologists and dental hygienists. *Gerodontology* 2012; 29(2): 525-35.
3. *Rabbo MA, Mitov G, Gebhart F, Pospiech P.* Dental care and treatment needs of elderly in nursing homes in Saarland: perceptions of the homes managers. *Gerodontology* 2011; 29(2): 57-62.
4. *Locker D, Gibson B.* Discrepancies between self-ratings of and satisfaction with oral health in two older adult populations. *Comm Dent Oral Epidemiol* 2005; 33(4): 280-8.
5. *Thean H, Wong ML, Kob H.* The dental awareness of nursing home staff in Singapore - a pilot study. *Gerodontology* 2007; 24(1): 58-63.
6. *Fiske J, Griffiths J, Jamieson R, Manger D.* Guidelines for oral health care for long-stay patients and residents. *Gerodontology* 2000; 17(1): 55-64.
7. *Eitinger RL, Beck JD, Miller JA, Jakobsen J.* Dental service use by older people living in long-term care facilities. *Spec Care Dent* 1988; 8(4): 178-83.
8. *Wardh I, Andersson L, Sorensen S.* Staff attitudes to oral health care. A comparative study of registered nurses, nursing assistants and home care aides. *Gerodontology* 1997; 14(1): 28-32.
9. *Gifti HC, Cherry-Peppers G, Oldakowski RJ.* Oral health care in US nursing homes, 1995. *Spec Care Dent* 1998; 18(6): 226-33.
10. *Sumi Y, Nakamura Y, Nagaosa S, Michiwaki Y, Nagaya M.* Attitudes to oral care among caregivers in Japanese nursing homes. *Gerodontology* 2001; 18(1): 2-6.
11. *Frenkel H, Harvey I, Needs K.* Oral health care education and its effect on caregivers' knowledge and attitudes: a randomised controlled trial. *Comm Dent Oral Epidemiol* 2002; 30(2): 91-100.
12. *Penner A, Timmons V.* Seniors' attitudes: oral health and quality of life. *Int J Dent Hyg* 2004; 2(1): 2-7.
13. *Reed R, Broder HL, Jenkins G, Spivack E, Janal MN.* Oral health promotion among older persons and their care providers in a nursing home facility. *Gerodontology* 2006; 23(2): 73-8.
14. *Reis SC, Marcelo VC, da Silva ET, Leles CR.* Oral health of institutionalised elderly: a qualitative study of health caregivers' perceptions in Brazil. *Gerodontology* 2011; 28(1): 69-75.
15. *White R.* Nurse assessment of oral health: a review of practice and education. *Br J Nurs* 2000; 9(5): 260-6.
16. *Costello T, Coyne I.* Nurses' knowledge of mouth care practices. *Br J Nurs* 2008; 17(4): 264-8.
17. *Willumsen T, Karlsen L, Naess R, Bjørntvedt S.* Are the barriers to good oral hygiene in nursing homes within the nurses or the patients. *Gerodontology* 2011; 29(2): 748-55.
18. *Forsell M, Sjögren P, Kullberg E, Johansson O, Wedel P, Herbst B, et al.* Attitudes and perceptions towards oral hygiene tasks among geriatric nursing home staff. *Int J Dental Hygiene* 2011; 9(3): 199-203.
19. *Frenkel HF.* Behind the screens: care staff observations on delivery of oral health care in nursing homes. *Gerodontology* 1999; 16(2): 75-80.
20. *Strand GV, Wolden H, Rykkje L, Gjellestad A, Stenerud G.* Oral care in the last stages of life. *Tidsskr Nor Laegeforen* 2005; 125(11): 1494-6. (Norwegian)
21. *Coleman P.* Opportunities for nursing-dental collaboration: Addressing oral health needs among the elderly. *Nurs Outlook* 2005; 53(1): 33-9.
22. *Charteris P, Kinsella T.* The Oral Care Link Nurse: a facilitator and educator for maintaining oral health for patients at the Royal Hospital for neuro-disability. *Spec Care Dent* 2001; 21(2): 68-71.
23. *Herriman G, Kerschbaum W.* Oral hygiene care and education needs in long-term care facilities in Michigan. *Dent Hyg* 1990; 174: 196-8.

24. Paulsson G, Fridlund B, Holmén A, Nederfors T. Evaluation of an oral health education program for nursing personnel in special housing facilities for the elderly. *Spec Care Dent* 1998; 18(6): 234–42.
25. Sonde L, Emami A, Kiljunen H, Nordenram G. Care providers' perceptions of the importance of oral care and its performance within everyday caregiving for nursing home residents with dementia. *Scand J Caring Sci* 2011; 25(1): 92–9.
26. Gonzalez EE, Nathe CN, Logothetis DD, Pizanis VG, Sanchez-Dils E. Training caregivers: disabilities and dental hygiene. *Int J Dent Hyg* 2013; 11(4): 293–7.
27. Paulsson G, Söderfeldt B, Nederfors T, Fridlund B. Nursing personnel's views on oral health from a health promotion perspective: a grounded theory analysis. *Acta Odontol Scand* 2002; 60(1): 42–9.
28. Paulsson G, Söderfeldt B, Fridlund B, Nederfors T. Recall of an oral health education programme by nursing personnel in special housing facilities for the elderly. *Gerodontology* 2001; 18(1): 7–14.
29. Wärdb I, Berggren U, Hallberg LR, Andersson L, Sörensen S. Dental auscultation for nursing personnel as a model of oral health care education: development, baseline, and 6-month follow-up assessments. *Acta Odontol Scand* 2002; 60(1): 13–9.

Received on October 1, 2014.

Revised on April 19, 2015.

Accepted on May 6, 2015.

Online First April, 2016.