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ORIGINAL ARTICLE

The oral hygiene and denture status among residential home residents

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Abstract The aim of this study was to investigate the oral hygiene practices and denture status of elderly people living in a residential home. One hundred one elderly people living in Gurcesme Zubeyde Hanim Residential Home, Izmir—52 women (mean age 75.5±7.8) and 49 men (mean age 75.3±8.8)—participated in an interview. Their oral hygiene practices, self-perceived oral health, denture status, and needs of denture were noted down. Self-perceived oral health was very bad in 9.9%, bad in 47.5%, good in 33.7%, and very good in 8.9%. From 69 people who reported maintaining oral hygiene, the incidence of oral hygiene practice was 36.2% once a day, 31.9% three times a day, 21.8% once a week, and 10.1% seldom. The majority, 60 people (59.4%), were dentate. Among the dentate, 47 people (78.3%) had full denture, 4 (6.6%) removable partial denture, 2 (3.3%) fixed/removable partial denture, 5 (8.3%) full/removable partial denture, and 2 (3.3%) one or more fixed partial dentures. By gender, 57.6% female and 61.2% male subjects were dentate. The relationship between having a social security and having a denture was significant (p=0.02); having a denture and needing a denture was also significantly related (p=0.00). The high prevalence of needs for denture pointed to the requirement for frequent dental check ups. The most important need within the residents of the residential home was daily oral hygiene. Nurses trained on this subject are required.

Keywords Oral hygiene · Denture status · Residential home · Elderly people · Self-perceived · Oral health

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Introduction

The aging process has no exact starting time and is an inevitable reality of life. Tooth loss is not a part of the natural aging process; however, older populations have significant oral health problems that require attention. Increased attention has been paid to oral health issues in geriatrics over the past few years [10]. The research has typically focused on epidemiological studies of the prevalence of oral conditions in or dental utilization by older adults [2, 13, 29, 30].

The residential home environment has several unique features. It serves frailer population, which is at greater risk for illness and functional loss, and it is intended to provide a more buffered, less demanding environment. This combination may accentuate the impact of oral status on well-being [15]. Among older people, oral health is generally perceived to be a less important need than physical health. Residents rarely receive more than emergency treatment for dental pain and discomfort [6, 19]. The concept of preventive dentistry for those more than 70 years is new [17]. Despite an increasing awareness of the need for dental care among the institutionalized elderly, the oral health status of nursing home residents has been neglected [16]. Many elderly

individuals have difficulty in maintaining oral and denture hygiene because of diminished manual dexterity, impaired vision, or associated debilitating conditions. Elderly people living in residential and nursing homes have even poorer dental health than those residing at home and experience high levels of clinically measured oral disease [27].

The impact of oral health on the quality of life of the elderly may have increased over the last decade because of the increase in the elderly population and the longevity without their own teeth [11].

Like in England, in Turkey, residential homes covered by law impose obligations upon people running the homes to ensure adequate and reasonable provisions in certain areas. These include accommodation, recreational facilities, catering safety, laundry services, heating, lighting, and personal hygiene, but not oral health or access to a dentist [25]. Although there is no dentist working regularly in the residential homes, they can be referred to hospitals for dental care and need of denture, and transportation can be arranged. The aim of this study was to investigate the oral hygiene practices and denture status of elderly people living in a residential home.

Materials and methods

Sample

There are 12 residential homes (except for nearby districts) that are run by local authorities or private institutions in Izmir, Turkey (two governmental and ten private). Private homes have a very limited capacity of only 10 to 15 elderly people who are mostly uncooperative, ill, and bedridden. The data were collected from Izmir Municipality Gurcesme Zubeyde Hanim Residential Home, which cooperates with Ege University in different projects on manager and staff basis and have residents from different sociocultural levels.

Among 260 elderly people living in Gurcesme Zubeyde Hanim Residential Home, 100 stayed in bedridden and emergency care unit. Along with 160 people, 101 residents (mean age 75.51±8.33) who were able to respond to a questionnaire, were willing, and gave fully informed consent were subsequently invited to participate in this study. A total of 101 elderly people, 52 women (mean age 75.5±7.8) and 49 men (mean age 75.3±8.8), were included. The Ethical Research Community at Ege University Nursing School approved the study.

Questionnaire

The questionnaire, which provided information about social demographics (age, gender, education, health insurance, marital status) and each resident's self-perceived oral health and oral hygiene practices, was carried out and recorded by a nurse. In our study design, the residents who did not go to school were classified as "non-educated." There is a wide spectrum of health insurance types (private, governmental, or no health insurance) in Turkey, so the classification was restricted to "insuranced" and "non-insuranced."

Clinical data such as the number of missing teeth abstracted from the charts, existing oral dentures, last visit to dentist, and aim of this visit were kept as simple as possible by a dentist.

The need for the denture was based on the Nevalainen's [22] method, which was the examiner's subjective judgement of the need for denture based on clinical experience, examination of the patient, examination of the prosthodontic appliance if present, the mechanical condition of the appliance, and discussion with the patient, and the subjects were categorized as "needs denture" or "does not need denture."

Data analysis

Categorical data were compared using the chi-square test. The relationship between the numerical data was determined using an appropriate parametric test. The level of significance was chosen as 0.05. All data were statistically analyzed by SPSS (11.0 for Windows, IL, USA).

Results

Residents' demographic characteristics and the frequencies of perceived oral health and oral hygiene practice have been reported in Tables 1 and 2. The average age was 75.51 years (±8.33, range=61–102), and the duration of stay in the residential home was 5.49 years (±5.12). The average number of remaining teeth for all subjects was 4.59 (±7.17, range=0–25).

The chi-square test revealed all possible relationships among demographics and oral hygiene practice. There was a significant difference between having a denture and needing one (p=0.00; Table 3). "Needs denture" was significantly higher among the residents with no denture than among the ones with one. Of the 60 people with dentures, it was believed that the dentures of 38 (63.3%) needed renewal, and it was observed that 38 (92.6%) did not have any dentures due to various reasons, although they were necessary. Health insurance was significantly related to having dentures (p=0.025; Table 4). Having a denture was significantly higher among the residents with health insurance than among the ones with no health insurance.

Education was not significantly related to the number of remaining teeth (p=0.54), having a denture (p=0.41), or oral hygiene practice (p=0.46).

Table 1 Demographic characteristics of residents (n=101)

Demographic information	Number	Percent
Marital status		
Married	4	3.9
Single	14	13.9
Widow	65	64.4
Divorced	18	17.8
Education		
Non-educated	64	63.4
Educated	37	36.6
Health insurance		
Non-insuranced	56	55.4
Insuranced	45	44.6
Chronic disorders		
Yes	70	69.3
No	31	30.7
Taking medication		
Yes	62	88.6
No	8	11.4

The number of remaining teeth was not significantly related to health insurance (p=0.55) or age groups (p=0.10).

Oral hygiene practice was not significantly related to the resident's perceived oral health or gender (p=0.61).

Table 2 Frequencies of perceived oral health and oral hygiene practices

Perceived oral health and oral hygiene practices	Number	Percent
Opinion of resident's oral health		
Bad	10	9.9
Not so good	48	47.5
Good	34	33.7
Very Good	9	8.9
Oral hygiene practice		
Yes	69	68.3
No	32	31.7
Incidence		
Once a day	25	36.2
Twice a day	0	0
Three times a day	22	31.9
Once a week	15	21.8
Seldom	7	10.1
Type		
Toothbrush	7	10
Toothbrush+toothpaste	52	75.7
Other (water, soap, misvak)	10	14.3
With who?		
Myself	69	100
Having dentures		
Yes	60	59.4
No	41	40.6
Do you use your dentures?		
Yes	55	91.7
No	5	8.3

Table 3 Relationship of having dentures and needs denture

Having a prosthesis	Need denture		
	Yes (%)	No (%)	Total
Yes	38 (63.3)	22 (36.6)	60
No	38 (92.6)	3 (7.3)	41

$\chi^2(1)=13.194$, $p=0.00$

As regards seeing a dentist, it was 1 year ago in 23 people (22.7%), 2 years ago in 12 (11.8%), more than 5 years ago in 48 (47.5%), and never in 18 (17.8%). The purpose of seeing the dentist was pain of tooth in 19 people (22.9%), need of dentures in 54 (65.1%), trouble of dentures in 7 (8.4%), treatment of periodontology in 2 (2.4%), and extraction of tooth in 1 (1.2%).

The majority, 60 people (59.4%), were wearing dentures. Among these, 47 people (78.3%) had complete dentures, 4 (6.6%) removable partial dentures, 2 (3.3%) fixed/removable partial dentures, 5 (8.3%) complete/removable partial dentures, and 2 (3.3%) one or more fixed partial dentures. By gender, 57.6% female and 61.2% male subjects were wearing dentures.

Among 52 people who used complete dentures, the average time of use was 11.88 years (±11.87, range=1–50). Among 11 people with removable partial dentures, the average time of use was 7.45 years (±7.63, range 1–25).

Discussion

Eisenstein et al. [7] and Ettinger et al. [8] reported that 85% of people more than 65 years of age had at least one chronic illness. According to an earlier report, about 90% of the elderly had one or more chronic diseases [14]. In our study, 70 people (69.3%) had one or more chronic diseases (cardiovascular diseases, rheumatoid arthritis, diabetes, respiratory system disorders, etc.), and 62 people (88.5%) took one or more medication.

Private health insurance does not cover the cost of dental treatment in Turkey. Thus, dental insurance is only given to the employees, workers, or retired people by the government. In the residential home in our study, people were of

Table 4 Relationship between health insurance and having dentures

Health insurance	Having a denture		
	Yes (%)	No (%)	Total
Yes	32 (71.1)	13 (28.8)	45
No	28 (50)	28 (50)	56

$\chi^2(1)=4.611$, $p=0.02$

various sociocultural and economic levels, and only 45% had social insurance. In this study, a statistically significant increase in the number of dentures among the socially insured subjects was observed. In a different study, denture use was found to be higher in direct proportion to the educational level of the residents with dental insurance [23]. Contrary to the findings of that study, no significant relationship was observed between the level of education and the use of dentures and the number of remaining teeth.

It was determined that 59.4% of the examined patients had full, fixed, removable, or combined dentures. This rate was less than that of Knabe and Kram [18] and Ćatovic et al. [5]. In the study by Gift et al. [12], of the 8,056 residents of the nursing home, almost one half (47%) were totally edentulous. In our study, there were 52 people (86.6%) using one or complete dentures (45 had upper–lower complete dentures).

Compared with a previous study, the number of remaining teeth was quite low in this study (4.59±7.17) [21]. This low number can be explained by inadequate preventive dentistry, belonging to various sociocultural levels, and lack of regular visits to dentist.

Frenkel et al. [9] reported that more than 70% of the 412 residents included in their study had not seen a dentist for more than 5 years, and 22% reported a current dental problem. Calabrese et al. observed that, of the 50 randomly selected homebound patients served by Boston's Home Medical Service, 80% had not seen a dentist within the last 2 years [4]. Ćatovic et al. [5] reported that only 19.8% of the 175 subjects had seen a dentist within the past 5 years, and 39% had not seen a dentist in at least 10 years. In the study by Karuza et al. [15], the median length of time since the resident was seen by the dentist was 5 months. Of the 101 cases included in our study, 48 cases (47.5%) had not seen a dentist for more than 5 years, whereas 18 (17.8%) had never seen one. These rates are lower than the findings of Frenkel et al. and higher than those of Catovic et al.

The individual's self-perceived need for and belief in dental health influence his dental utilization behavior as much as his dental status [30]. Of the 8,056 residents in the study by Gift et al. [12], 15% were described as having excellent or very good oral health. Unlike the results of the researcher, this rate was found to be 42.6% (43 people) for the 101 cases included in our study.

A recent comparison of studies investigating perceived and professionally assessed prosthodontic treatment needs in old people showed a patient-perceived need for treatment in various study populations ranging from 11 to 54%, whereas the normative need in the same populations ranged from 65 to 97.8%. In all the studies examined, the normative, professionally determined need was at least 25% higher than the patient-perceived one [24]. In the present study, no significant relationship was observed between the existing oral dentures and their use. Again, regarding the evaluation of oral dentures, the relationship between the convenience of the utilized existing dentures and the state of the dentures believed by the dentist to be changed was found to be significant. In other words, although there were problems in the existing dentures of the cases, even self-reported, they continued to use the dentures, although they were uncomfortable. This may be due to the acceptance of the existing conditions, priority of their vital chronic diseases, and the tiring process of the construction. When inquired about the reasons why they did not have or use dentures, the cases replied that they did not want to have them constructed, they could not get used to the ones prepared, or they had problems in using them.

Characteristic of elderly institutionalized people is very poor oral hygiene [20, 28]. Payne and Locker [23] reported that high rates of self-care occurred only for toothbrushing in dentate adults between age 50 and above. Wirz and Tschappat [31] found that, of the 100 nursing home residents, only 38% brushed their teeth three times daily. According to the results of Zhu et al. [32], 23% of the 65–74 year olds brushed their teeth at least twice a day. The director and the staff of the residential home in our study stated that the residents were provided with toothpaste on a regular basis; however, the rate of residents performing oral hygiene three times daily was observed to be 31.9%, lower than that of Wirz and Tschappat.

Elderly people may not be requesting dental treatment, but may, if asked, request assistance with oral hygiene. Hence, the appropriate dental services to meet the needs of frail elderly and the treatment of these individuals with dignity may involve suitably trained oral care assistants rather than qualified personnel [3]. In this study, all the residents expressing to carry out oral hygiene remarked that they did it on their own, without any help. On the other hand, even if they asked for help, in the residential home in our study, there did not exist an adequate number of personnel and nurses trained on oral hygiene. The residential home needs a dentist to perform regular check-ups and a nurse to help and increase awareness of the residents, especially on oral hygiene. The assessment to be carried out after the need has been met can be the subject matter of a further study, and comparisons with this study can be made.

Optimal oral hygiene, combined with physiological changes related to aging and use of medications, may impair proper function and construction integrity of fixed and removable dentures. Most of these problems rise within the group of elderly patients whose oral health and hygiene are further complicated by their reduced ability to independently maintain oral hygiene habits and visit dental practice [1, 26].

Conclusions

Being dentate and having a loss of cognitive and functional capacity are predictive of oral treatment need among residential home residents. Enhanced interaction between nurses and dental professionals needs to be promoted for better awareness of preventive measures and better regular oral care for frail and dependent elderly peoples. Controlling, and renewing or rearranging where necessary, people's dentures, which have a crucial role in social communication and nutrition, will provide comfort in their lives.

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References

1. Adulyanon S, Vourapukjaru J, Sheiman A (1996) Oral impacts affecting daily performance in a low dental disease Thai population. Community Dent Oral Epidemiol 24:385–389
2. Antczak AA, Branch LG (1985) Perceived barriers to the use of dental services by the elderly. Gerodontics 1:194–198
3. BSDH (1996) Guidelines for standards of dental care for people with disabilities. British Society of Dentistry for the Handicapped, London
4. Calabrese JM, Friedman PK, Rose LM, Jones JA (1999) Using the GOHAI to assess oral health status of frail homebound elders: reliability, sensitivity, and specificity. Spec Care Dent 19:214–219
5. Ćatovic A, Bergman V, Ćatic A (2003) Qualitative evaluation of elderly home residents' fixed and removable prostheses in relation to the ADL index. J Dent 31:3–8
6. de Baat C, Bruins H, van Rossum G, Kalk W (1993) Oral health care for nursing home residents in The Netherlands—a national survey. Community Dent Oral Epidemiol 21:240–242
7. Eisenstein N, Engelhart CI, Johnson V, Wolf J, Williamson J, Losonczy MB (2002) Normative data for healthy elderly persons with the neurobehavioral cognitive status exam (Cognistat). Appl Neuropsychol 9:110–113
8. Ettinger RL, Beck JD, Martin WE (1990) Clinical decision making in evaluating patients: a process study. Spec Care Dent 10:78–83
9. Frenkel H, Harvey I, Newcombe RG (2000) Oral health among nursing home residents in Avon. Gerondotology 17:33–38
10. Gift HC (1988) Issues of aging and oral health promotion. Gerodontics 4:194–206
11. Gift HC, Redford M (1992) Oral health and the quality of life. Clin Geriatr Med 8:673–683
12. Gift HC, Cherry-Peppers G, Oldakowski RJ (1997) Oral health status and related behaviours of U.S. nursing home residents, 1995. Gerodontology 14:89–99
13. Hand JS, Hunt RJ, Beck JD (1988) Coronal and root caries in older Iowans: 36-month incidence. Gerodontics 4:136–139
14. Jong AW (1988) Community dental health, 2nd ed. Mosby, St. Louis
15. Karuza J, Miller WA, Lieberman D, Ledenyi L, Thines T (1992) Oral status and resident well-being in a skilled nursing facility population. Gerontologist 32:104–112
16. Kayser-Jones J, Bird WF, Paul SM, Long L, Schell ES (1995) An instrument to assess the oral health status of nursing home residents. Geriodontologist 35:814–824
17. Kiyak HA, Grayston MN, Crinean CL (1993) Oral health problems and needs of nursing home residents. Community Dent Oral Epidemiol 21:49–52
18. Knabe C, Kram P (1997) Dental care for institutionalized geriatric patients in Germany. J Oral Rehabil 24:909–912
19. MacEntee MI, Weiss R, Waxler-Morrison NE, Morrison BJ (1987) Factors influencing oral health in long term care facilities. Community Dent Oral Epidemiol 15:314–316
20. MacEntee MI, Wyatt CC, McBride BC (1990) Longitudinal study of caries and cariogenic bacteria in an elderly disabled population. Community Dent Oral Epidemiol 18:149–152
21. Mollaoglu N, Alpar R (2005) The effect of dental profile on daily functions of the elderly. Clin Oral Invest 9:137–140
22. Nevalainen MJ, Rantanen T, Narhi T, Ainamo A (1997) Complete dentures in the prosthetic rehabilitation of elderly persons: five different criteria to evaluate to need for replacement. J Oral Rehabil 24:251
23. Payne BJ, Locker D (1992) Oral self-care behaviour in older dentate adults. Community Dent Oral Epidemiol 20:376–380
24. Schou L (1995) Oral health, oral healthcare and oral health promotion among older adults: social and behavioural dimensions. In: Cohen L, Gift W (eds) Disease prevention and oral health promotion. Munksgaard, Copenhagen, pp 213–270
25. Simons D, Brailsford S, Kidd EA, Beighton D (2001) Relationship between oral hygiene practices and oral status in dentate elderly people living in residential homes. Community Dent Oral Epidemiol 29:464–470
26. Srisilapanan P, Sheiham A (2001) The prevalence of dental impacts on daily performances in older people in northern Thailand. Gerodontology 18:102–108
27. Steele JG, Sheiham A, Marcenes W, Walls AWG (1998) National diet and nutrision survey: people aged 65 years and over, vol. 2: report of the oral health survey. HMSO, London
28. Vigild M (1990) Evaluation of an oral health service for nursing home residents. Acta Odontol Scand 48:99–105
29. Wilentz JS, Adelson R, Kleinman DV, Badinelli J (1986) A plan for oral health research in aging: a collaborative project of the National Institute on Aging, the National Institute of Dental Research, and the Veterans Administration. Gerodontics 2: 208–211
30. Wilson AA, Branch LG (1986) Factors affecting dental utilization of elders aged 75 years or older. J Dent Educ 50:673–677
31. Wirz J, Tschappat P (1989) The oral hygiene, dental health and prosthetic care of old age home pensioners and geriatric patients. A study at the Adullam Foundation in Basel. Schweiz Monatsschr Zahnmed 99:1253–1260
32. Zhu L, Peterson PE, Wang HY, Bian JY, Zhang BX (2005) Oral health knowledge, attitudes and behaviour of adults in China. Int Dent J 55:231–241