Oral Complaints of Denture-Wearing Elderly People Living in Two Nursing Homes in Istanbul, Turkey

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Abstract
Aim: The aim of this study was to observe and determine oral complaints of people aged 55 years or older, living in two nursing homes in Istanbul, Turkey, and their satisfaction with their complete or partial dentures by means of a simple questionnaire.
Methods: Two old people's homes (one public and one private) in the district of Uskudar in Istanbul agreed to take part in this study. All residents who were available were invited to answer a piloted nine-point questionnaire with questions on age, gender, physical problems, eating, and communication, aesthetic denture wearing and psychological problems. The questions were asked in person by one investigator. The resulting data were entered into SPSS version 15.
Results: Out of a total of 210 residents, 130 (61.9%) took part in the study, of whom 53% (n=71) of residents were living in the private nursing home and 60% (n=81) were female. One hundred and five (80%) were denture wearers. More than half of the residents (59%, n=79) were over 75 years old. Problems were mostly seen in older ages, especially those over 75 years old, over 60% of whom reported problems for all the variables listed in the questionnaire. Women were more aware of halitosis than men.
Conclusions: The results of this study confirm those of previous studies and suggest that elderly people with dentures, and particularly complete dentures, frequently complain of a wide range of problems including: eating, social interaction and communication and these problems have a detrimental influence on their quality of life.

Key Words: Geriatric Dentistry, Oral Health of Elderly People, Oral Complaints in Elderly People

Introduction

In developed countries, the proportion of elderly people (those aged 65 years or more) in the population is increasing. There is therefore a need to find better solutions to the problems of elderly people and to improve the quality of their life. Although the population in Turkey is young, with a median age of 29.2 years, one-third of Turkish people are elderly and the problems of this age group will be very important in the next few years [1].

Elderly people can be faced with physical, psychological, and intellectual problems and many others. In one sense, ageing means having some limitations. These limitations can be seen in deteriorating cognition, sight, hearing, lung volume, heart volume, muscle strength, and bone mineral content as well as self-assessment of health. When it comes to oral health, many physical and psychological problems may develop. They can include tooth loss due to periodontal breakdown, coronal and root caries, tooth surface loss, cusp fracture, xerostomia, and deterioration in the sense of taste [2-4]. Elderly people are more likely to wear complete or partial dentures. Wearing dentures can affect eating, speech, laughing, kissing, facial expression and appearance. Celebic and Knezovic-Zlataric (2003) reported that complete denture wearers were significantly more satisfied with their speech than partial denture users [5].

A very recent study found that oral health in the completely edentulous was associated with the avoidance of food items and satisfaction with den-

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tures, whereas in the partially edentulous it was associated with maxillary denture retention and age [6]. The completely edentulous reported better oral health and satisfaction with their dentures than the partially edentulous. The results of this study suggested that completely and partially edentulous patients differed with regard to variables associated with, and predictive of, both self-reported oral health and denture satisfaction [6].

Allen (2003) reported that an individual who had eating problems that were caused by pain and discomfort would have rated this problem as extremely important. However, when the cause of the problem was diagnosed as oral cancer, and treated with radiotherapy and/or surgery, the same individual may report the original problem as relatively unimportant [7].

Pain due to an unsatisfactory denture sometimes causes insomnia and some negative changes in eating behaviours. The latter change causes lack of self-confidence therefore older people may become less active in social life [8,9]. The psychological effects of these problems are important outcomes and have to be taken into consideration in people of all ages. However, they are commoner in the elderly.

Aim

Against this background, the aim of this study was to observe and determine oral complaints of people aged 55 years or older, living in two nursing homes in Istanbul, Turkey, and their satisfaction with their complete or partial dentures by means of a simple questionnaire.

Methods

This cross-sectional study was designed to determine the oral complaints of older people, both men and women, living in different nursing homes in Uskudar, which is an ancient and densely populated district in the Asian part of Istanbul. Uskudar has a population 582,666 and 18,000 people are over 65 years.

In total, there are six nursing homes in Uskudar; two are publicly owned and four are privately owned. From these, two nursing homes (one public and one private) were randomly selected.

When the investigators visited the two residential homes, residents who were taking a rest in their room at the time of visit were not disturbed. All other available residents, who were participating in social or sporting activities in both homes, were invited to take part in the study. They were given information about the study. After they had given their consent to take part, they were asked the questions from a nine-item questionnaire (*Figure 1*).

A single interviewer performed face-to-face interviews with each of the consenting residents. Before starting the survey, a pilot study was performed to test the questionnaire. Twelve elderly people took part in the pilot study. Some slight modifications were made to the questionnaire in the light of the comments given by the participants in the pilot study.

The main outcome measures of the questionnaire were as follows:

- Demographics: type of nursing home (public/private), age and gender.
- Details of the dentures: presence and type of dentures, complete or partial or implant-retained, oral hygiene, brushing habits and frequency.
- Problems: usage, eating, communication, aesthetic, psychological.
- Satisfaction with dentures/implants.

Statistical analysis

The resulting data were entered into a statistical software program (Statistical Package for the Social Sciences, version 15.0; SPSS Inc, Chicago, USA), which was used for all the statistical analyses.

Coefficient of reliability, Cronbach's alpha, was calculated for assessing internal consistency of the questionnaire items. Intra-class correlation coefficient (ICC) and Pearson's correlation coefficient (r) were calculated for convergent validity of the questionnaire.

Ethical approval

Because the residents were not physically examined and no interventions were performed, it was thought unnecessary to seek ethical approval for the study.

Results

One hundred and thirty out of a total of 210 residents in the two nursing homes agreed to participate in the study. This was a response rate of 61.9%. Fifty-three per cent (71) of the residents were living in the private nursing home and 47% (59) in the public nursing home. Among residents 60.4 % (81) were female and 39.6% (49) were male. Fifty-nine per cent (79) of the residents were over 75 years old, 14.9% (20) were between 70 and

Figure 1. *The questionnaire.*

1. Type of residential home: Private or Public

2. Gender:

A. Female
B. Male

3. Age:

A. 55-60 years B. 60-65 years C. 65-70 years D. 70-75 years E. Older than 75 years

4. Do you have dentures or have you had implants?

A. Yes B. No

5. If yes, which type of denture/implant do you have?

A. Fixed bridge B. Partial denture (removable)
C. Complete dentures D. Implant and denture(s)

6. How many times have your denture(s) been changed (replaced)?

A. Never B. 2 C. 3 D. 4 E. More than 4 times

7. Do you clean your mouth and dentures regularly?

A. Yes B. No C. Sometimes

8. Problems that you have with your denture

Usage problems

- Problems during wearing and/or removing	present	absent	sometimes
- Hygiene and cleaning problems	present	absent	sometimes
- Feeling pain and discomfort	present	absent	sometimes

Eating problems

- Pain	present	absent	sometimes
- Food gets out of my mouth, denture is mobile	present	absent	sometimes
- Change in eating habits	present	absent	sometimes
- Biting and chewing difficulty	present	absent	sometimes

Communication problems

- Difficulty in speaking	present	absent	sometimes
- Difficulty in laughing	present	absent	sometimes
- Difficulty in kissing	present	absent	sometimes
- Limitation of facial expression	present	absent	sometimes

Aesthetic problems

- Dissatisfaction about shape of teeth	present	absent	sometimes
- Dissatisfaction about colour of teeth	present	absent	sometimes
- Dissatisfaction about quality of teeth	present	absent	sometimes

Psychological effects

- Bad smell (halitosis)	present	absent	sometimes
- Pain-related sleep problems (insomnia)	present	absent	sometimes
- Pain-related stress and discomfort	present	absent	sometimes
- Decrease in self-confidence	present	absent	sometimes

9. Level of patient satisfaction with denture/implant treatment

A. I am totally dissatisfied
B. I am not totally satisfied
C. It is good but sometimes uncomfortable
D. I am satisfied

75 years old, 9.0% (12) were between 65 and 70 years old, 6.7 % (9) were between 60 and 65 years old, and 10.4% (14) of the residents were between 55 and 60 years old. Most of the under-65 year-olds resided in the public nursing home.

A considerable majority—79.9% (109)—had an oral prosthesis. Of these, 81.7% (89) had complete dentures, 11.0% (12) had a partial denture, 3.7% (4) had an implant and a denture, 2.8% (3) had a fixed bridge, and 0.9% (1) had an implant not associated with a denture, thus a total of 105 had dentures. Their responses to the questions are now analysed. Responses from the other 25 elderly people who did not wear dentures are not analysed in this paper.

Among residents with dentures, 44.0% (48) had changed (replaced) their denture twice, 27.5% (30) three times, and 28% (30) more than three times; 0.9% (1) had not changed yet (still had the original denture). Almost half of the residents (53.2%) said that they cleaned their mouth and dentures (took care of their oral hygiene) regularly.

To assess internal consistency for question 8 (with all five sub-sections), Cronbach's alpha was calculated and it was found to be 0.919 and the least value of Cronbach's alpha for "if an item was deleted" was found as 0.910.

To assess convergent validity, which is the degree to which results from one test agree with results from another, the intra-class correlation coefficient (ICC) and a Pearson's correlation coefficient (r) were calculated. To perform these, the ninth question of the questionnaire and visual analogue scale (VAS) for the same question were used. ICC and Pearson's r were calculated respectively as 0.826 and 0.872, with $P<0.0001$.

Responses to the five sections of question 8

The percentage of the responses for the item 8 with 5 subparts was given. In all cases, the majority of elder people declared that they had problems with their denture (*Table 1*).

When physical and psychological problems were analysed according to nursing homes, gender and age groups, it was found that there were no significant differences between nursing homes ($P>0.05$). The only statistically significant difference was found in halitosis between genders ($P=0.04$). Women were more aware of halitosis than men.

When the presence of the denture problems among age groups was analysed, it was evident that problems were mostly seen in elder ages especially over-75 years-old age group responding in favour of "presence of the complaint" (*Table 2*).

Table 1. *Denture-wearing residents' responses to question 8 (n = 105)**

Denture problems		Present n (%)	Absent n (%)	Sometimes n (%)
Usage problems	- Problems during wearing or removing	88 (83.8)	4 (3.8)	13 (12.4)
	- Hygiene and cleaning	90 (85.7)	8 (7.6)	7 (6.7)
	- Feeling pain and discomfort	73 (69.5)	16 (15.2)	16 (15.2)
Eating problems	- Pain	83 (79.0)	10 (9.5)	12 (11.4)
	- Food gets out of my mouth, denture is mobile	80 (76.2)	7 (6.7)	18 (17.1)
	- Change in eating habits	79 (75.2)	10 (9.5)	16 (15.2)
	- Biting and chewing difficulty	68 (64.8)	12 (11.4)	25 (23.8)
Communication problems	- Difficulty in speaking	84 (80.0)	9 (8.6)	12 (11.4)
	- Difficulty in laughing	94 (89.5)	2 (1.9)	9 (8.6)
	- Difficulty in kissing	94 (89.5)	4 (3.8)	7 (6.7)
	- Limitation in facial expression	93 (88.6)	4 (3.8)	8 (7.6)
Aesthetic problems	- Dissatisfaction about the shape of teeth	89 (84.5)	2 (1.9)	14 (13.3)
	- Dissatisfaction about the colour of teeth	87 (82.9)	4 (3.8)	14 (13.3)
	- Dissatisfaction about the quality of teeth	88 (83.8)	5 (4.8)	12 (11.4)
Psychological effects	- Bad smell (halitosis)	92 (87.6)	5 (4.8)	8 (7.6)
	- Pain-related sleep problems (insomnia)	94 (89.5)	5 (4.8)	6 (5.7)
	- Pain-related stress and discomfort	90 (85.7)	5 (4.8)	10 (9.5)
	- Decrease in self-confidence	91 (86.7)	6 (5.7)	8 (7.6)

*n=105; among the denture-wearing residents, 89 had complete dentures, 12 had a partial denture, 4 had an implant and a denture.

Table 2. *Denture-wearing residents' responses to question 8 according to age groups (n= 105)* (continued over)*

Denture problems		**55-60 n (%)**	**60-65 n (%)**	**65-70 n (%)**	**70-75 n (%)**	**Over 75 n (%)**
Usage problems	- Problems during wearing or removing					
	Present	5 (5.7)	5 (5.7)	7 (8.0)	15 (17.0)	56 (63.6)
	Absent	0 (0.0)	0 (0.0)	0 (0.0)	1 (25.0)	3 (75.0)
	Sometimes	4 (30.8)	3 (23.1)	0 (0.0)	1 (7.7)	5 (38.5)
	- Hygiene and cleaning					
	Present	6 (6.7)	7 (7.8)	6 (6.7)	15 (16.7)	56 (62.2)
	Absent	0 (0.0)	0 (0.0)	0 (0.0)	1 (12.5)	7 (87.5)
	Sometimes	3 (42.9)	1 (14.3)	1 (14.3)	1 (14.3)	1 (14.3)
	- Felling pain and discomfort					
	Present	2 (2.7)	5 (6.8)	5 (6.8)	11 (15.1)	50 (68.5)
	Absent	4 (25.0)	0 (0.0)	1 (6.3)	5 (31.3)	6 (37.5)
	Sometimes	3 (18.8)	3 (18.8)	1 (6.3)	1 (6.3)	8 (50.0)
Eating problems	- Pain					
	Present	4 (4.8)	4 (4.8)	6 (7.2)	16 (19.3)	53 (63.9)
	Absent	2 (20.0)	0 (0.0)	1 (10.0)	0 (0.0)	7 (70.0)
	Sometimes	3 (25.0)	4 (33.3)	0 (0.0)	1 (8.3)	4 (33.3)
	- Food gets out of my mouth, denture is mobile					
	Present	5 (6.3)	4 (5.0)	6 (7.5)	14 (17.5)	51 (63.8)
	Absent	1 (14.3)	0 (0.0)	0 (0.0)	0 (0.0)	6 (85.7)
	Sometimes	3 (16.7)	4 (22.2)	1 (5.6)	3 (16.7)	7 (38.9)
	- Change in eating habits					
	Present	6 (7.6)	3 (3.8)	5 (6.3)	14 (17.7)	51 (64.6)
	Absent	1 (10.0)	1 (10.0)	0 (0.0)	1 (10.0)	7 (70.0)
	Sometimes	2 (12.5)	4 (25.0)	2 (12.5)	2 (12.5)	6 (37.5)
	- Biting and chewing difficulty					
	Present	4 (5.9)	4 (5.9)	5 (7.4)	11 (16.2)	44 (64.7)
	Absent	1 (8.3)	0 (0.0)	1 (8.3)	2 (16.7)	8 (66.7)
	Sometimes	4 (16.0)	4 (16.0)	1 (4.0)	4 (16.0)	12 (48.0)
Communication problems	- Difficulty in speaking					
	Present	4 (4.8)	5 (6.0)	6 (7.1)	15 (17.9)	54 (64.3)
	Absent	2 (22.2)	0 (0.0)	1 (11.1)	0 (0.0)	6 (66.7)
	Sometimes	3 (25.0)	3 (25.0)	0 (0.0)	2 (16.7)	4 (33.3)
	- Difficulty in laughing					
	Present	6 (6.4)	5 (5.3)	6 (6.4)	16 (17.0)	61 (64.9)
	Absent	1 (50.0)	0 (0.0)	1 (50.0)	0 (0.0)	0 (0.0)
	Sometimes	2 (22.2)	3 (33.3)	0 (0.0)	1 (11.1)	3 (33.3)
	- Difficulty in kissing					
	Present	6 (6.4)	5 (5.3)	6 (6.4)	16 (17.0)	61 (64.9)
	Absent	1 (25.0)	1 (25.0)	1 (25.0)	0 (0.0)	1 (25.0)
	Sometimes	2 (28.6)	2 (28.6)	0 (0.0)	1 (14.3)	2 (28.6)
	- Limitation in facial expression					
	Present	5 (5.4)	5 (5.4)	5 (5.4)	15 (16.1)	63 (67.7)
	Absent	1 (25.0)	1 (25.0)	1 (25.0)	1 (25.0)	(0.0)
	Sometimes	3 (37.5)	2 (25.0)	1 (12.5)	1 (12.5)	1 (12.5)

Table 2. *Denture-wearing residents' responses to question 8 according to age groups (n= 105)* (continued)*

Denture problems		**55-60 n (%)**	**60-65 n (%)**	**65-70 n (%)**	**70-75 n (%)**	**Over 75 n (%)**
Aesthetic problems	- Dissatisfaction about the shape of teeth					
	Present	5 (5.6)	4 (4.5)	7 (7.9)	14 (15.7)	59 (66.3)
	Absent	1 (50.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (50.0)
	Sometimes	3 (21.4)	4 (28.6)	0 (0.0)	3 (21.4)	4 (28.6)
	- Dissatisfaction about the colour of teeth					
	Present	7 (8.0)	6 (6.9)	6 (6.9)	13 (14.9)	55 (63.2)
	Absent	1 (25.0)	0 (0.0)	0 (0.0)	0 (0.0)	3 (75.0)
	Sometimes	1 (7.1)	2 (14.3)	1 (7.1)	4 (28.6)	6 (42.9)
	- Dissatisfaction about the quality of teeth					
	Present	5 (5.7)	5 (5.7)	7 (8.0)	13 (14.8)	58 (65.9)
	Absent	2 (40.0)	0 (0.0)	0 (0.0)	0 (0.0)	3 (60.0)
	Sometimes	2 (16.7)	3 (25.0)	0 (0.0)	4 (33.3)	3 (25.0)
Psychological effects	- Bad smell (halitosis)					
	Present	6 (6.5)	6 (6.5)	6 (6.5)	15 (16.3)	59 (64.1)
	Absent	1 (20.0)	2 (40.0)	0 (0.0)	0 (0.0)	2 (40.0)
	Sometimes	2 (25.0)	0 (0.0)	1 (12.5)	2 (25.0)	3 (37.5)
	- Pain-related sleep problems (insomnia)					
	Present	5 (5.3)	6 (6.4)	7 (7.4)	16 (17.0)	60 (63.8)
	Absent	1 (20.0)	0 (0.0)	0 (0.0)	1 (20.0)	3 (60.0)
	Sometimes	3 (50.0)	2 (33.3)	0 (0.0)	0 (0.0)	1 (16.7)
	- Pain-related stress and discomfort					
	Present	5 (5.6)	5 (5.6)	7 (7.8)	16 (17.8)	57 (63.3)
	Absent	1 (20.0)	1 (20.0)	0 (0.0)	0 (0.0)	3 (60.0)
	Sometimes	3 (30.0)	2 (20.0)	0 (0.0)	1 (10.0)	4 (40.0)
	- Decrease in self-confidence					
	Present	4 (4.4)	5 (5.5)	7 (7.7)	15 (16.5)	60 (65.9)
	Absent	1 (16.7)	1 (16.7)	0 (0.0)	2 (33.3)	2 (33.3)
	Sometimes	4 (50.0)	2 (25.0)	0 (0.0)	0 (0.0)	2 (25.0)

*n=105; among the denture-wearing residents, 89 had complete dentures, 12 had a partial denture, 4 had an implant and a denture.

The majority of residents—55.6% (60)—said they were satisfied with their current denture and 28.7% (30) answered: "it is good but sometimes I feel uncomfortable".

Discussion

Although 23 (17.7%) people who took part in this study were not "elderly" according to the World Health Organization definition of the word "elderly", most of these 23 residents can be considered as older people because their average number of lost teeth was from 10 to 15. On the other hand, Müller *et al.* (2007) stated that institutionalised elderly people have, in general, fewer teeth than those at the same age living independently. Furthermore, these 23 residents had also been living for a long time in their institution as "older people" [10].

In the Uludamar *et al.* (2011) study, 346 elderly people from different nursing homes were interviewed and it was founded that 60% of participants were edentulous, 22.8% of whom had no complete denture [11]. Akar *et al.* (2008) observed 101 elderly people living in a nursing home in Izmir, Turkey, the majority of whom (60 (59.4%) were

edentulous [12]. Among these edentate elderly people, 47 (78.3%) had complete dentures [12]. These results were similar to those in the current study.

Ozkan *et al.* (2011) also showed that most of the edentulous people in their study (81%) were wearing complete dentures while 19% had no dentures [13]. The results of this study were similar to our study, not only in the similarity of the proportion of residents wearing complete dentures but also in the proportion of residents (16.15%) who did not wear dentures.

Moreira *et al.* (2009) found that the prevalence of complete edentulism was 63.17%. In their study, they also found that the prevalence of upper edentulism was 80% and lower was 58% [14].

Evren *et al.* (2011) investigated the majority of elderly people living in three different nursing homes and found that 66.6% were edentulous. A positive relationship was observed between poor denture hygiene habits and the presence of denture-related stomatitis [9]. In the study of Unluer *et al.* (2007) of 216 elderly residents of a nursing home in Ankara, Turkey, 193 were clinically examined and only 7.3% were found to have a functional dentition [15]. The results indicated the poor dental health of the elderly residents and suggested that there was great need for dental health services programmes for the elderly living in these institutions [15].

Aizawa (2005) found that elderly people with oral malodour tended to be edentulous and had large deposits of oral debris coating their tongues [16]. Nalcaci (2008) [17] found that the accumulation of bacterial plaque on the tongue, oral dryness, burning mouth, overnight denture wear, and lower educational levels were significantly related to oral malodour. Tongue care and maintenance and overnight removal of dentures decrease patients' oral malodour levels significantly.

In the current study, most of the residents who took part (85.3%) declared that they had no hygiene and cleaning problems with their dentures. This may be because of the educational and socio-economic levels of residents, which were mid-range.

Although Lieidberg *et al.* (2007) found that inadequate dietary habits were independent of teeth and denture status [3], Marshal *et al.* (2002) showed that loss of natural teeth or ill-fitting dentures reduced dietary quality and nutrient intake [18]. The same authors found that maintenance of an adequate lower denture was important for nutrient intake to support systemic health. Furthermore, inadequate or problematic complete dentures caused problems in chewing ability and generated pain [18]. In a Japanese study, Ikebe *et al.* (2004) also found that oral pain and discomfort were two significant complaints of elderly residents [2]. According Ostenberg *et al.* (2007), 80% of participants considered their chewing ability to be good [19]. This was a comparable finding to that of the current study in which 66.1% assessed their chewing ability as good. Ono *et al.* (2003) found that masticatory ability for gummy jelly was associated with age (<85 years), gender (male) and activity of communication (high) [4]. The current study also produced similar findings.

On the other hand, in a study of Japanese elderly, Ikebe *et al.* (2002) found that for complete denture wearers the greatest dissatisfaction was with their speech/articulation (28.5%) [8], but in the current study this percentage was found to be smaller (19.3%).

One of the main strengths of the current study was that in spite of the fact that 88 of the denture wearers reported that they had some difficulty in speaking, the authors were able to communicate with and investigate oral health complaints in the two old people's homes. It can be difficult to communicate with older patients because of factors such as deafness and dementia. Age has a significant impact on quality of life; as people grow older, oral disorders can have a negative on their quality of life. Yoshida *et al.* (2001) found significant positive correlation between the quality of life and denture satisfaction scores [20]. Edentulous elderly people who are well satisfied with their daily lives are also likely to be satisfied with their complete dentures. As in the Yoshida *et al.* (2001) study, residents in the current study were generally satisfied with their current dentures but sometimes said that they felt uncomfortable in their mouths [20]. Bae *et al.* (2006) confirmed that there was no general oral health-related quality of life difference between partial denture and complete denture wearers [21]. Peltola *et al.* (1997) showed that the main effect of the replacement of existing dentures renewal was an increase in patient satisfaction [22].

Oral health problems in elderly people are important problems and oral care should be an important part of geriatric health promotion programmes. If patients are able to maintain good oral hygiene until they die, it is preferable that they have

fixed rather than removable prostheses [23]. It is highly recommended that countries establish oral health programmes to meet the needs of the elderly [24]. The authors of this paper agree with Petersen *et al.* (2010) [25] that the integration of oral health into national general health programmes may be effective to improve the oral health status and quality of life of the elderly population.

The benefits of preventive actions when young will be fundamental in the future and this should result in a smaller number of edentulous people. Thus, there should be initiatives directed to today's elderly people that can improve their life quality and include them as part of the agenda for oral health, meeting their current needs for their restorative and rehabilitation treatment [14].

Preventive oral health care to maintain natural dentition throughout life and regular dental care to ensure adequate denture fit and function may decrease nutritional risk in elderly people. Although geriatric dentistry is an individual subject, geriatric dental education does not have a high profile in Turkish dental schools and unfortunately no specialty exists in Turkey, or in the majority of other countries. The authors of this paper agree with the suggestion of de Lima *et al.* (2006) that there must be some dental courses about geriatrics and geriatric dentistry [26]. Geriatric dentistry needs to focus on the special needs of this neglected and socio-economically deprived population to improve their quality of life.

Conclusions

The results of this study confirm those of previous studies and suggest that elderly people with dentures and particularly complete dentures frequently experience a range of problems including eating, social interaction and communication and that these problems have a detrimental influence on their quality of life.

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Contributions of each author

- NB, AÇ, KB, AY and BK were responsible for preparing the questionnaire and performing the pilot study.
- NB was the coordinator of the study and responsible for preparing the manuscript.
- AÇ was responsible for interviews and completing the questionnaire.
- KB and AY helped AÇ in collecting, entering, and analysing data.
- BK contributed to writing the manuscript.

All authors read and approved the final manuscript.

Statement of conflict of interest

In the opinion of the authors, there is no conflict of interest.

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