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### Oral health in frail elderly

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## Chapter 7

General discussion

## General discussion

The general aim of the study was to assess oral status and oral health of frail home-dwelling and indwelling (institutionalized) elderly as well as their impact on general health, frailty and quality of life. The results revealed that oral health of care dependant home-dwelling elderly was commonly poor, especially in elderly persons with remaining teeth and or implants even when they were still visiting oral health professionals (Chapter 3). Probably, in home-dwelling elderly that continued to visit oral health professionals, the focus of the care they received is to keep them free of pain and to clean their mouth rather than try to bring and maintain oral health at the required level.

Oral health of indwelling elderly was even worse than care dependent home-dwelling elderly (Chapter 2, Appendix A). So, even when the caregivers recognize the neglect of or failing of oral health care, which unfortunately even often is not the case<sup>1</sup>, they are not able to reinstate the required level of oral self-care or are unable to provide the needed oral care in the indwelling elderly by themselves (Appendix C).

A complicating factor that interferes with providing or reinstating the required level of oral care is that in particular many indwelling elderly are non-cooperative to dental treatment (Chapter 2). A major factor underlying this phenomenon is the mental illnesses, e.g., dementia, many care dependent elderly suffering from. With regard to the oral status, it was striking that, notwithstanding their commonly poorer oral health, patients with remaining teeth scored better on quality of life, general health and frailty (Chapter 4).

### *Elderly with remaining teeth and edentulous elderly*

As mentioned above, the Embrace study (Chapter 4) learned us that quality of life is higher, general health better and frailty less among elderly with remaining teeth and implant-supported overdentures as well as that complex care and frail elderly have more oral health problems than robust elderly. Thus, apparently elderly with remaining teeth or implant-supported overdentures are less fragile and have better general and oral health.

The apparently paradoxical results of the Embrace study are surprising to some extent as poor oral health is assumed to be a health risk.<sup>2-8</sup> A factor that may underlie this paradox is that oral health of elderly with remaining teeth was reasonable until they became care dependant in the last few months before the screening. When elderly become frail and their general health declines, oral clearance is often rapidly reduced. This combined with oral dryness, reported by the elderly (Chapter 4) can lead to a high risk of oral infections and dental caries.<sup>8,9</sup> Furthermore, manual skills and cognitive function often deteriorate in frail elderly and, as a result, they become unable to brush their teeth properly and to visit their dentist regularly<sup>10</sup>, or they may

simply forget to do so. Another possible explanation is that elderly with remaining teeth have a higher socio-economic status (SES) and better general health<sup>11,12</sup> which was also the case in our study (Chapters 3 and 4) People with a higher education and higher SES are usually more interested in their own general health and oral health, which may also result in fewer diseases/disorders in later life. This presumption was recently confirmed by Vettore<sup>13</sup> who showed that adults with a higher SES generally have better oral health. Finally, oral function in patients with remaining teeth and implant-supported overdentures is commonly better than in edentulous subjects wearing conventional dentures or no denture at all.<sup>14,15</sup> This phenomenon may also underlie why these elderly feel less fragile and rate the general health as better than edentulous elderly with conventional dentures.

The study described in Chapter 2 and Appendix A revealed that indwelling patients with remaining teeth were far more often non-cooperative and agitated than edentulous patients. They were often difficult to treat, even in experienced hands. This raises the question that, while community living elderly with remaining teeth perform better than edentulous community living elderly, whether they will continue to do so when they become indwelling. For example, patients with dementia can be very agitated and otherwise difficult to treat.<sup>16</sup> Such patients can be in pain but are unable to communicate that they are in pain, which might result in non-cooperative behavior in daily care, medical care and oral care. To our experience, behavior of these patients often improved after treating possible pain complaints. The latter is in agreement with the findings of Husebo<sup>17</sup>, who also showed that pain was related to agitation. In other words, when a patient with remaining teeth is admitted to a nursing home, their dental status should be carefully checked and needed treatment should be executed as soon as possible. This way, indwelling elderly with remaining teeth may feel better and will respond better on daily care.

A factor that complicates the need for oral care in indwelling patients, is that these patients are often uncooperative or already in a very poor general condition at admission. Almost one-third of the indwelling patients die during the first year of admittance in the nursing home (Chapter 2). This poor general health makes dental treatment even more complex or sometimes impossible as these patients are already in a very poor health or mental condition at admittance.

#### *Edentulous elderly with implant-supported overdentures*

Dependent elderly (and younger) persons suffering from retention problems of their mandibular denture can benefit from oral implants, providing that adequate oral health care and aftercare can be delivered by volunteer aids and executive care providers.<sup>14</sup> The better performance of elderly with implant-supported overdentures is not limited to their oral health status, but also reflected in a better frailty status and higher quality of life (Chapter 4). This observation in community living elderly is in line with the many studies showing that patients provided with implant-supported overdentures in general perform significantly better than edentulous patients with

conventional dentures with regard to their oral function and oral health related quality of life.<sup>18,19</sup>

Moreover, community living edentulous elderly with implant-supported overdentures resembled more towards community living elderly persons with remaining teeth than edentulous community living elderly with conventional dentures. This observation points towards the impact of oral status and oral health on healthy ageing as (early) loss of teeth might be associated with a worsening of general health and a higher frailty status. It has to be mentioned, however, that SES might in part underlie this observation as oral health in adults with a higher SES is generally better. Vettore<sup>13</sup>, for example, showed in their 13-years follow-up cohort study that a poor social position and weak social ties are important predictors for tooth loss and self-rated oral health. In the Embrace study edentulous patients had also on average a significant lower SES.

The study described in **Chapter 5** revealed that peri-implant health was rather good in elderly supplied with implant-supported mandibular overdentures. Ten-years implant survival was high, scores of plaque, gingiva, bleeding and probing depths around the implants were low, and mean peri-implant bone loss. These favorable outcomes may also be the result of the strict oral hygiene regime to which patients were subjected to and that apparently resulted in moderate healthy peri-implant tissues. However, the overall slightly poorer performance of the older group, as reflected by a higher peri-implant plaque-index, may reflect difficulty in manipulation of materials/devices needed to clean abutments and bar. So, the clinical performance of mandibular implant-supported overdentures is considered equally successful in younger and older patients in case a proper oral hygiene regime is safeguarded. However, one must keep in mind that if patients are not able anymore to perform sufficient oral hygiene, peri-implant tissues are prone to infection and bone loss (**Chapter 6**). Thus, attention must be given to people who are not showing up for routine follow-up visits for dental care anymore.

In the general dental office, also community living elderly with implant-supported mandibular overdentures were screened (**Appendix B**) and it was observed that they had a good compliance as long as they were capable to come in the dental office (unpublished data). Plaque and bleeding indexes were slightly higher than those observed in the clinical prospective study (**Chapter 5**), but had not resulted in peri-implantitis. Apparently, elderly patients with implants visiting a dental office for routine check-ups are self-reliant despite high rates of co-morbidities and a high number of used medicines. Practically, they only needed support of oral hygiene and regular dentist visits.

### *Limitations of the study*

A limitation of the studies described in this thesis is that they are mainly performed in the Northern part of the Netherlands. Although the results of our studies might

reflect just the situation in this Dutch region, there are also great advantages of performing research as such in this region. Migration factors are low and response figures are high, important factors for long-term epidemical studies.<sup>20</sup>

Complex care elderly are overrepresented in the group of non-responders in our studies. As the oral status and oral health of complex care responders were already worse than those of frail and robust elderly, the oral status and oral health of non-responders will probably be at best comparable, but probably even worse. This presumption further stresses the need for prevention of decline in oral health and oral status and establishing adequate oral self-maintenance and oral care in elderly.

The response rate of 77% in the Embrace study was remarkable high, while the response rate in community living elderly was apparently at the low end (35%). The response rate of the community living elderly is, however, a response rate as commonly is seen in this type of studies.<sup>21,22</sup> Even when the circumstances for community living elderly are optimized (home visits, different timetables and good support of homecare organizations), many community living elderly still do not wish to join this type of studies.

In the studies we performed, none of the elderly had implant-supported crowns or bridges. Even the number with implant-supported maxillary overdentures was low. This may be due to the phenomenon that implant-supported prosthodontics are still a rather young dental treatment option. In the beginning it was mainly applied for implant-supported mandibular overdentures. In the near future it is expected that the number of patients with implant-supported maxillary overdentures and implant-supported crowns and bridges will increase. Of note, maintenance of suprastructures for maxillary overdentures and implant-supported crowns is, however, in need of higher patient skills than maintenance of suprastructures for mandibular overdentures. Presumably, the risk on implant-related oral health problems will increase when these patients become care dependent.

### *Continuity of oral care and recommendations for community living and indwelling elderly*

Many elderly do not visit their dentist regularly or do not at all. We advise dentists to continue tracking their elderly clients, and we advise general practitioners to encourage their patients to get dental care in order to maintain oral health at the required level to preserve a functional dentition. This counts especially for people with remaining teeth and with superstructures on dental implants. Care givers should be aware of this phenomenon and should safeguard adequate oral health maintenance in case patients are not able to maintain the wished level of oral health themselves. Multidisciplinary teams, including a geriatric dentist or oral hygienist with geriatric skills, should be an integral part of elderly care models (such as the Embrace study (Dutch: Samen Oud; Chapter 4) to safeguard the required level of oral health in community living elderly. As a starting point, improved awareness of the poor oral

health status of the elderly should in fact already be, or otherwise shortly become, an urgent priority among care providers. It is advised that at the moment elderly become care-dependent, care workers should already keep an eye on their dental status and oral health to ensure that life-proof oral care is provided to these elderly. In fact, care workers and dental professionals should work side by side to provide elderly with the oral care they need. As a consequence, there is an increasing need for geriatricians to become aware of the health hazard of poor oral health and for dentists to have training in geriatrics (**Chapter 6.2**). However, when oral health-care providers and geriatricians do not take the responsibility of the persuading society regarding the importance of adequate oral health, the resulting weakened oral health of community-dwelling older people might become a new geriatric syndrome.<sup>23</sup>

The proportion of elderly with remaining teeth in our patient cohorts was rather low (**Chapters 2 and 3**). However, the number of patients with remaining teeth will probably rapidly increase during the next decades as the percentage of elderly with remaining teeth is rapidly growing. Currently, over the age of 75 years, edentulous patients are still in the far majority in the Northern part of the Netherlands<sup>24</sup>, while in the 65-75 years group the number of edentulous patients is already rapidly declining.<sup>25</sup> The foreseen increase in number of elderly with remaining teeth will have significant impact on the dental needs of community living and indwelling elderly. Thus, the organization of oral care in nursing homes is in high need of optimization as many of the indwelling elderly are not able to take care for their teeth themselves and their dental awareness is low. A complicating factor in this respect is that many community living elderly and most of the indwelling elderly are not able anymore to visit a dentist themselves due to transportation or mobility problems as well as that they have often impaired skills to clean their dentition or dentures in a proper way. In other words, mobility and cognitive problems are probably strong factors underlying the decline in dental health, because elderly themselves are often not aware of the, usually rather slowly progressing, changes in their lives. A direct reflection of the process is the worsened oral hygiene and decline in dental treatment by missing regular dental check-ups related to general health problems these elderly face. In this respect, it is important to note that most home care nurses are untrained in providing oral hygiene care.<sup>26</sup>

In the Dutch society the far majority of frail and complex community living elderly will be cared for in the home situation in the near future. Therefore, it is necessary to introduce the oral health guidelines to home-care organizations like they have been implemented in nursing homes (unfortunately with not much success yet, see **Appendix C**). Also dentists in general practice should be aware of the fact that their patients might have become care dependent. They should try to keep track of these patients and visit them, like home physicians, in their homes or in the nursing home. So general dental practices have to anticipate and adapt to the changing community and should implement guidelines how to deal with geriatric dental problems in

their offices. In this respect, the collaboration between general practitioners, pharmacists and dentists should evolve to a good professional triad to provide optimal information to home-care organizations in developing optimum (dental) care in the context of frailty, general health and quality of life. Such new models for geriatric care can only be successful, however, when they are provided with sound financial support.

Community living elderly are supposed to take their own decisions in health matters. Many elderly underrate their oral health problems, however.<sup>27</sup> Thus, there is a far greater need for oral care than the level of oral care elderly ask professionals to perform. The reasons given for not visiting an oral health professional for dental check-ups and treatment are various, but mostly are a combination of the low dental awareness, physical barriers to visit health professional in their office and costs of dental treatment (unpublished data). The underrating of the importance of proper oral health by many elderly bear a significant health risk, e.g., the need for removal of complex implant systems due to severe peri-implantitis, aiming for a better general health (Chapter 6). Special attention with regard to safeguarding oral health is also needed for elderly with cognitive impairment (dementia, Parkinson, CVA), kidney disease, diabetes mellitus, rheumatic diseases etc.<sup>2-8,28</sup> Either these patients are not able anymore to provide the needed level of oral health themselves or a worsened oral health may have a negative impact on the care they receive to control the diseases they suffer from.

Resuming, to our opinion all elderly above the arbitrary age of 75 years should be screened on a regular basis, preferably once a year, for a check of their general health and oral health, their use of medicines and their frailty status. The result of this screening should underlie the specific oral care needs for a particular patient, preferably provided by general dentists and oral hygienists. On their indication, i.e., when they are not able to provide the needed dental care anymore by themselves, this care should be taken over by dental care providers with geriatric skills. Getting old should be a joy for life, but a joyful oral health for patients at old age seems to be the challenge for dental professionals for the next decade to achieve.

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