



MASTEROPPGAVE

**Dental status in elderly with
and without dementia living in
a nursing home
-a pilot study**

Anette Strindberg og Linda Paulsen

Veileder: Maud Annika Bergdahl



UNIVERSITETET I TROMSØ
Det helsevitenskapelige fakultet
Institutt for Klinisk Odontologi

Juni 2011

ABSTRACT

Several studies conducted in the latest decades in Norway have shown a remarkable decrease in the edentulous population. This along with the overall increase in the number of elderly presents tremendous challenges for the healthcare system in the future. Dementia is a condition that further complicates the oral health situation in the elderly population. In this pilot study we wanted to investigate whether there were any differences in the oral health status between the demented and the non-demented patients living in a nursing home in northern Norway. Looking at the dental records of 28 subjects we concluded that there were no differences of statistical significance related to dementia between the two groups. However, we could investigate other aspects such as geographical differences, age and gender, and comparing our results to former studies in Norway. Many of the dental records lacked information about health, medication and dental status. This not only makes it difficult to conduct a study, but could also compromise the ability of a dental practitioner to offer the correct treatment.

INTRODUCTION

Along with overall increase in the number of human population in the world, the age distribution is also changing. With advances in medicine and prolonged life expectancy, the proportion of older people will continue to rise worldwide. For example, there were 390 million people over 65 years recorded in the 1998 World Health Report, and this figure is estimated to reach the double in 2025. The post-war baby boom generation will reach 65 years of age in 2011, significantly augmenting the number of elderly (1).

These changes gives tremendous challenges in caring for this ageing population. As people age, the susceptibility to chronic and life-threatening diseases as well as acute infections increases. Cancer, cardiovascular diseases, diabetes, infections and poor oral

health, most notably tooth loss and severe periodontal conditions, are more prevalent in this age group. The consequences of these diseases and conditions are significant, leading to disabilities and reduced quality of life (1).

The Norwegian governments Directorate of Health has in 2005 completed a major project called “Tenner for livet” (from now on TFL) (-“teeth for life”). It is an extension of the previous guidelines regarding oral health issues (1987), which in its original form was directed towards improving oral health among the children and the young population in Norway (2).

The need of some attention towards oral health in the ageing Norwegian population became evident as studies conducted throughout the 70’s, 80’s and 90’s showed a quite remarkable decrease in the number of edentulous individuals in the Norwegian population (3). This, together with the knowledge about the overall increasing number of elderly people, led to the start of the new “TFL” –project in 1996, which included the following aim: “Improving oral health in diseased elderly living in institution”. This led to distinctive guidelines to be used by dental as well as other health workers on a number of oral health related issues.

Dementia and oral health

Dementia is a condition that further complicates oral health in the elderly population. Dementia has been defined as a chronic and often gradually worsening disease or brain damage that leads to loss of intellectual functions. Typical symptoms of dementia can be memory loss, difficulties on concentrating or doing things that are considered “everyday tasks”, such as getting dressed. The ability to do planning or abstract thinking can be reduced, as well as the judgement capability. Furthermore, a demented persons language can change, becoming more incoherent and repetitive. Emotional instability, irritability, lacking initiative and “socially inappropriate behaviour” are also among the symptoms, as well as loss of control over bodily functions such as laxation (4).

The causes of dementia are believed to be many. Some forms of the disease, like

Alzheimer disease, is caused by degeneration of brain tissue. Other forms can be caused by diseases in the blood vessels of the brain, or other factors such as lack of vitamins, metabolic disorders or alcoholic abuse (4).

One is exposed to develop dementia if one suffers from cardiac diseases, metabolic diseases or use medication. Neurological disorders or damaging influence on the brain, such as epilepsy, head injury, abusing alcohol and solvent damage also can make a person further predisposed to develop the condition (4).

Previous studies have suggested that there are remarkable differences when it comes to oral health in elderly. In a Danish study from 2007, Ellefsen and co-workers (5) concludes that patients in a memory clinic in Copenhagen already had a high level of active dental caries at the time of referral. Their study shows that the caries activity is related to the type and severity of dementia. These findings are also confirmed by an Australian study from 2002 (6).

The prevalence of dementia is 20% in people aged above 80 years of age, and as many as 40-50% of residents in somatic nursing homes in Norway are demented (7).

Based on results from earlier studies we hypothesized that the group of elderly institutionalized patients with dementia had poorer oral health than other elders in the same age group.

AIM

The purpose of our pilot study was to investigate whether there are any differences in dental health status in elderly with and without dementia living in an institution in northern Norway.

METHODS

This study was made by a cross-sectional design. We were given access to dental records of elderly patients in a Nursing Home in Troms County in the north of Norway. This institution consists of three departments. “Omsorgssenteret” is a specialized unit for persons diagnosed with dementia. “Bo og behandling” is a unit for elderly without dementia. They require less assistance, but are unable to live at home. The last department is “sykehjemmet”. This unit houses patients both with and without dementia, all of whom are in need of extensive care.

The nursing home is well renomated, and bases the care on the principles of “everyday life”, which seeks to meet the patients needs to live their lives as naturally as possible. The way of living in this community has for many centuries been based on fishing and agriculture. In the nursing home the inhabitants are able to keep themselves occupied with familiar tasks such as keeping hens in the garden, repairing old fishnets and so on. This is all part of the original idea in the planning of the caretaking, as several studies show that demented cope better in familiar surroundings.

SUBJECT

Our subjects were in total 28 patients, 27 of whom participated in the study. Through their dental records, we collected information about gender, age, presence of diagnosed dementia, patients having full dentures, partial dentures and own teeth. All dental records were updated in 2010, and all examinations have been done by the same dental hygienist at the dental clinic nearby.

RESULTS

Table 1. The subjects and their oral status and diagnoses are presented.

<u>Subject</u>	<u>Number</u>	<u>%</u>	<u>Dementia</u>	<u>Dentures</u> <u>Upper/Lower</u>	<u>Partial</u> <u>Dentures</u>	<u>Own</u> <u>teeth</u>	<u>Dementia</u> <u>and own</u> <u>teeth</u>
Men	9	33,3	1	8	1 (25%)	3 (33,3%)	0 %
Women	18	66,7	10	15	3 (75%)	6 (66,7%)	40 %
Total	27	100	11	23	4	9	36%
Median age: 85 years (Range: 52-98 years)							

Nine of the subjects were men (33,3%), one of which were diagnosed with dementia. Eight of the men had full dentures, one had partial dentures, three men were having their own teeth.

Eighteen subjects were women (66,7%), ten of them having the diagnose dementia. Fifteen had full dentures, three had partial dentures, and six had their own teeth.

Table 2. By placing our subjects in different age groups, we can show the following table.

	Age <67 years	Age 67-74 years	Age 75-84 years	Age >85 years	Total of subjects
Total number of people in group	1	1	9	16	
Only own teeth	100%	0 %	11 %	6,25 %	11 %
Only dentures	0%	100 %	44 %	81,25 %	66,7 %
Combination of own teeth and dentures	0%	0 %	44 %	12,50 %	22,2 %
Edentulous but not having dentures	0%	0 %	0 %	0 %	0 %

DISCUSSION

The purpose of our study was to investigate whether there are any differences in dental health status in elderly with and without dementia living in an institution in northern Norway. Our hypotheses was that the elderly population with dementia had poorer oral health than other elders the same age.

Searching the dental records for statistics we soon found our hypothesis to fail. First of all, the sample of patients was not big enough to be statistically significant. Even so, the study was to be considered a pilot-study, and the findings in the material could be of importance pointing in one direction or another. There was no evidence that the demented in our sample have fewer teeth than have their peers without dementia. Looking at the male and female patients in separate groups, we found that among the females, 40% of the patients with dementia had own teeth (see table 1.), whereas only 25% of the patients without dementia had own teeth (not in table). In this group the idea that the illness has affected the patients' ability to take care of their oral health is not reinforced. In the even more reduced group of male patients these numbers were not similar, as the sample was even more reduced. None of the demented males had own teeth, (see table 1.) and 38% of the non-demented males had own teeth, (not in table).

Looking back at our aim, there were several aspects in the dental records that would have been interesting to address. The concept of dental and oral health comprises much more than having or not having teeth. Conditions such as oral stomatitis, periodontal status, other oral or systemic diseases, use of medication and former dental treatment are of interest. Not only in order to develop and conduct a study, but also in terms of dental treatment and being a caretaker. However, in the dental records there were little information to be found apart from the use of prosthesis in the majority of the patients. Therefore, we tried to compare the information we had in the records to information published of national and regional basis. We have looked at studies published by "Folkehelseinstituttet" and "Statistisk Sentralbyrå" (SSB).

Medication and health status

In a group of patients aged 70 +, the most common diseases are diabetes, cancer, cardiovascular disease, and dementia. The use of medication in this age-group is higher than in younger individuals, as 20% of them use more than 10 different prescribed drugs in one year (8). Statistics say that this group often has more than one disease at the same time (8). It is very likely that this also applies to the individuals in our study.

As mentioned earlier, the dental records that formed the basis of our study, contain very little or no references to the patients use of medication and their diseases other than dementia. The reason for this may be lack of time to complete the records or simply an idea that their general health doesn't influence the oral health. The truth is that a dentist or a hygienist require information concerning the patients health and use of medication when planning a treatment. Many drugs distributed to elderly and/or demented patients give oral side effects such as xerostomia and candidosis (9). A patient with heart failure or high blood pressure should not be given anesthetics with adrenaline (10). Furthermore, a patient with diabetes is contra indicated to be treated with "septocaine" as a local anesthetic (10). These are merely examples of a few of the most common diseases that require specific consideration when treating a patient. This is important information and should be available at the time of treatment.

Problems related to nutrition and malnutrition

A well-known problem in caring for the demented is the everyday struggle to prevent them from suffering from dehydration, unwanted weight loss and malnutrition. A Dutch study showed that demented being cared for in care farms had far better appetite than the demented in traditional nursing homes (11). Focusing on maintaining this aspect of everyday life in the studied nursing home might have a positive effect on the patients appetite. But the problem of malnutrition, weight loss and oral health is complex. As

people age, their senses get impaired (12). This also affects the ability to differentiate between flavors (12). Many can only feel the taste of sweet, and in some cases refuse to eat other foodstuff. This further complicates the oral health of these patients, especially the ones with own teeth and/or partial dentures. It seems evident that in a situation of malnutrition, dehydration and weight loss, the intake of highly energetic food and beverages is prioritized. This is on the expense of the oral health, as the nutrition often has a high content of sugars.

Own teeth

Our sample of 28 dental records did not meet the requirements of making conclusions of statistical significance. However, we could look at tendencies in this group compared to other studies that has been done on the subject.

Several Scandinavian studies have been conducted on oral health status investigating peoples number of own teeth, and then giving comparisons regarding to for example age, gender or geographic matters. In our study, we found the percentage of patients with own teeth to be 33,3%, but only 11% had only own teeth, and no prostheses (see table 2). This is quite a remarkable difference compared to the formerly mentioned “TFL” – project, where a study done in 2004 (13), found that 54% had their own teeth and 33,8% of these had only own teeth.

In our study 22,2 % of the patients had a combination of own teeth and dentures (table 2). In the “TFL”- study, 20,1% of the elderly had a combination of own teeth and dentures, 43% had full dentures, and no own teeth. We found that 66,6% of the patients in our study had dentures, and no own teeth. The numbers of patients with combination of own teeth and prostheses are fairly even in the two studies, which means that the largest discrepancy was found in the large amount of patients having only dentures and no own teeth.

NOU (official analysis) from 2005 shows that the average patient belonging to group C2 (institutionalized elderly) have 12,3 own teeth (14). Our material lacks complete information about the patients number of own teeth, but it indicates that the average number of own teeth in the patients at the nursing home was far lower than 12,3.

Geographical differences.

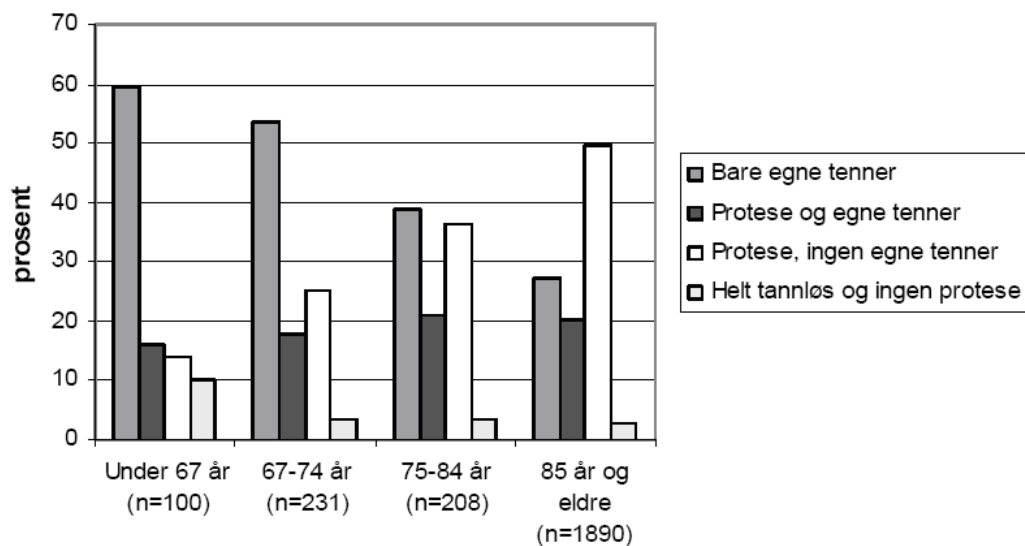
In Norway, people in the highest age groups had a poor dental service when they grew up. The service depended highly on geographical areas. Living in the south of the country and preferably in a city, there was relatively easy access to dental services. Living in the countryside in northern Norway, you would have poor or no dental service at all. The situation back then still affects the oral health of today's elderly. The main part of the patients in our study grew up in the countryside in northern Norway in the 1930s or 1940s. Many of them didn't even see a dentist before they were in their thirties, as many small towns in northern Norway didn't have dentists until the post-war period of 1950 and even 1960s.

This was underlined in a Norwegian study from 2003. The purpose of the study was to estimate the prevalence of teeth and dentures in individuals aged 67 years and above, dividing the country in three geographical areas: South-East (A), West-Central (B), and Northern counties (C). Whereas region A had a prevalence of own teeth of 62.0 and region B 27.7, the number in region C was 2.9. As regards to the prevalence of individuals with dentures only, the study found region A to have a prevalence of 11.1, region B 43.1, and region C 65.7 (15).

Age and gender

Studying differences in the age groups in our sample, not surprisingly, we found that the oldest patients were also the ones with less own teeth. The following diagram (Fig. A) presents results from the “TFL” (baseline 2)- study from 2004 (13), comparing oral status in elderly people living in nursing homes, divided into different age groups. The columns represents percentage of subjects having only their own teeth, followed by those having a combination of own teeth and dentures, third column subjects having only dentures, and the fourth shows subjects being edentulous but not having any dentures.

Fig. A. Dental status according to age groups. Results from TFL baseline study 2004.



When we compared the results of our table 2 with the above diagram, we again had to consider the fact that our sample was too small to make any conclusions of statistical significance. We could rather investigate whether we could find any tendencies of interest in comparing these two. As there was only one subject in our sample who was aged between 67-74 years, the discrepancy to the same group in the “TFL” - diagram was outstanding, and these results were clearly not comparable.

Looking at the third group in the ”TFL”- diagram, most of the elderly aged between 75 and 84 years had their own teeth only (38,8%), followed by those having only dentures (36,5%). The fewest in this age-group had a combination of own teeth and dentures (21,2%). From our table 2, we find that the fewest had their own teeth only (11%), and equal numbers of subjects had a combination of dentures and own teeth, or dentures only (44%).

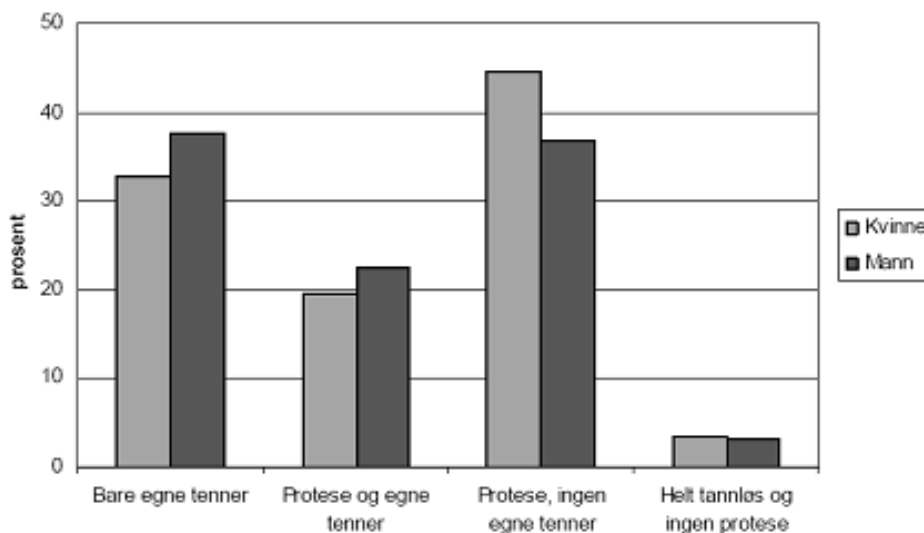
In the highest age-group, we found that 6,25% of the subjects still had their own teeth only, 12,5 % had a combination of their own teeth and dentures, whereas 81,25 % had only dentures. In the same group in “TFL” 27,3% of the subjects had only own teeth, 20,4% had a combination of own teeth and dentures, and 49,6% subjects had only dentures.

A small fraction of the participants in “TFL” were also edentulous and not wearing dentures. The edentulous subjects from our sample all had dentures, but it is essential to note there were’nt any information about whether they all used their dentures as supposed or not.

Not surprisingly, the tendency was reduced number of own teeth and combination of own teeth and dentures, along with increased age of the individuals. The fact that our numbers of individuals being edentulous was higher than for the participants of same age in “TFL” could be partly explained by the geographical differences as found in earlier studies (15).

Looking at differences in gender, we did not find any differences between gender and having own teeth. Other studies have found varying degrees of differences in oral status between genders. The Baseline 2-study in “TFL” found that slightly fewer of the individuals with their own teeth only were women, and correspondingly, a bit higher percentage of women having only dentures than men. This is illustrated in the following figure (13):

Fig. B. Distribution of the sample according to dental status and gender (977 men, 2454 women), by percentage.



Statistisk sentralbyrå (SSB), 2008, has shown that there were differences between genders in Norway when it comes to dental status in the population. In individuals aged 67 years and above, 29% of the females and 21% of the males had less than 10 own teeth. In northern Norway these numbers were even higher, again affirming that oral health status among elderly in this part of the region was significantly poorer than in the rest of the country (2). In our sample of dental records we found that 96% of the patients had less than 10 own teeth. Considering that the median age in our group is 85,2 years old, it is likely that the percentage would have been lower if the median age was closer to 67

years. The numbers from SSB did not reveal median age in their study, but still the high percentage of elderly with few own teeth in our sample indicated that even if statistically correcting for age, the numbers would probably be higher than the numbers from SSB. This coincides with the statement that SSB holds, that a higher percentage of elderly had lost their teeth in northern Norway, compared to the numbers for the whole country.

Problems/lack of information.

In the dental records we could not find any information about when the diagnosis of dementia was set. In addition, there was a possibility that some of the patients suffer from undiagnosed dementia, as the prevalence of the disease in the group of individuals aged >90 is 40%. This was rather low, as the prevalence in the group aged 80-89 was 50% in our subjects. Knowing that the prevalence of dementia increases with age, this could be a source of bias in our study.

Furthermore, the dental records were found to provide very variable information, and some of which were incomplete in certain aspects, such as the patients number of own teeth, earlier treatments, other diseases, use of medication and other oral health issues.

Moreover, we would also have liked to include other aspects in our study. It would have been interesting to do a longitudinal study, and thus being able to look at the development of oral health status over a period of time.

LITTERATURE

1. who.int Internett

http://www.who.int/oral_health/action/groups/en/index1.html (lest 15.04.10)

2. Forebyggende tannhelsearbeid. Oslo, Helsedirektoratet, 1987. Helsedirektoratets veiledningsserie nr. 1-87. IK-2191.

3. Folkehelseinstituttet. Internett

<http://www.fhi.no/artikler/?id=70818> (lest 29.09.10)

4. nhi.no Internett

<http://nhi.no/sykdommer/hjerne-nervesystem/ulike-sykdommer/demens-oversikt-1325.html> (lest 15.04.10)

5. Ellefsen B, Holm-Pedersen P, Morse DE, Schroll M, Andersen BB, Waldemar G, Assessing Caries Increments in Elderly patients With and Without Dementia. J Am Dent Assoc 2009; 140(11): 1392-1400.

6. Chalmers JM, Carter KD, Spencer AJ. Australian research center for population Oral Health Dental School University of Adelaide, Australia. Caries experience in existing and new nursing home residents in Adelaide, Australia. Gerodontology 2002; Jul 19(1): 30-40.

7. Nygaard HA, Jakobsen MU, Moe TJ. Pleiebelastningen av demente pasienter i somatisk sykehjem og i psykiatrisk sykehjem. NJPsych, 1985; 39 (3): 173-176.

8. fhi.no Internett

http://www.fhi.no/eway/default.aspx?pid=233&trg=MainLeft_5565&MainArea_5661=5565:0:15,4444:1:0:0:::0:0&MainLeft_5565=5544:84205::1:5569:1:::0:0 (lest 25.01.11)

9. relis.no Internett

http://www.relis.no/Publikasjoner/Arkiv/1996/Munntorrhet_som_legemiddelbivirkning (lest 25.01.11)

10. felleskataliogen.no Internett

http://www.felleskatalogen.no/pasientutgave/show.do?filename=/content/pkv/X/Xylocain_Dental_adrenalin...Dentsply_565546/565545.html&printable=1&frameset=0&href=1&highlight=0&thin=0 (lest 25.01.11)

11. wur.nl Internett

http://resource.wur.nl/en/wetenschap/detail/demented_aged_at_care_farms_have_better_appetites/ (lest 29.09.10)

12. Matteson M, McConnell E. Gerontological Nursing: Concepts and Practice 312-329. Elsevier - Health Sciences Division, 2006

13. Helsedirektoratet.no Internett

http://www.helsedirektoratet.no/vp/multimedia/archive/00009/IS-1334_9322a.pdf (lest 29.09.10)

14. regjeringen.no Internett

<http://www.regjeringen.no/nb/dep/hod/dok/nouer/2005/nou-2005-11/5/2/5.html?id=153848> (lest 29.09.10)

15. Henriksen BM, Axell T, Laake K. Geographic differences in tooth loss and denture wearing among the elderly in Norway. Community Dent Oral Epidemiol 2003; 31 (6): 403-411.

16. Statistisk Sentralbyrå. Tannhelse. Personell og kostnader, tannhelsetilstand og tannlegebesøk, side 34-35 http://www.ssb.no/emner/03/02/rapp_201029.pdf