

Oral health in old age
Perceptions among elderly persons and medical professionals

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To my grandchildren: *Astrid, Noah*

Det är ingen konst att bli gammal
Konsten är att vara gammal
J W von Goethe

Everybody wants to get old
but nobody wants to be old

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ABSTRACT

The general aim of this thesis was to investigate perceptions of oral health among elderly persons and among medical professionals working at primary health care centres. The study samples consisted of elderly persons and medical professionals in the County of Stockholm.

The thesis combines a quantitative and a qualitative perspective. The quantitative method was based on a questionnaire and clinical examination with defined variables carried out by a dental hygienist. Two different data collection methods were compared in Paper I. The qualitative methods comprised two types of in-depth interview. One interview study was phenomenological-hermeneutic inspired by Giorgi (Paper II) and the other was based on grounded theory inspired by Strauss & Corbin (Papers III & IV).

The results show that there are differences between the way the individuals who participated in the studies perceive their oral health and function and the way it is evaluated by professionals in clinical examinations (Paper I). Furthermore, the individuals' perceived oral health as a whole comprised of several aspects: functional, social and psychological. All the aspects were connected to well-being and quality of life (Paper II).

The studies of the medical professionals (Paper III) revealed that the general practitioners were unaware of the oral health of their elderly patients. They perceived cultural differences between medicine and dentistry. The district nurses (Paper IV) reported several obstacles that prevented them from taking responsibility for the whole nursing care around an individual. They perceived oral health and oral problems as belonging exclusively to dentistry.

The findings of all these studies emphasise the complexity of oral health and oral care when it comes to both the communication between the dental professionals and the patients and the co-operation between the medical and dental professionals. The research also points to the importance of finding ways to support and promote oral health among elderly individuals. As their general health deteriorates, their ability for self-care is reduced and they become less independent. Identifying this breaking point at which intervention becomes necessary is one of the major challenges to ensure good oral health in ageing.

In conclusion, improved understanding and co-operation between general practitioners and dental teams, as well as between district nurses and dental hygienists, is necessary to improve oral health and oral care which is important to enhance the well-being of the elderly.

Keywords: oral health, elderly, general practitioner, district nurse, collaboration

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PREFACE

This thesis is based on the following original papers, which are referred to in the text by their Roman numerals (I-IV).

- I Andersson K, Gustafsson A, Buhlin K. Self-perceived oral function in elderly residents in a suburban area of Stockholm, Sweden.
Oral Health & Preventive Dentistry 2004; 2(3):195-01.
- II Andersson K, Nordenram G. Attitudes to and perceptions of oral health and oral care among community-dwelling elderly residents of Stockholm, Sweden: an interview study. *International Journal of Dental Hygiene* 2004; 2: 8-18.
- III Andersson K, Furhoff A-K, Nordenram G, Wårdh I. “Oral health is not my department”. Perceptions of elderly patients’ oral health by general medical practitioners in primary health care centres. A qualitative interview study. *Scandinavian Journal of Caring Sciences* – in press 2006 (20).
- IV Andersson K, Berglund B, Nordenram G, Wårdh I. “Oral health has low priority” Perceptions of elderly patients’ oral health by district nurses in primary health care centres. A qualitative interview study. *Submitted* 2006.

ABBREVIATIONS

BOP	Bleeding On Probing
DN	District Nurse
DS	Departementsserie/Departmental Series
FRN	Forskningsrådsnämnden/Swedish Council for the Planning and Co-ordination of Research
GP	General Practitioner
GT	Grounded Theory
HI index	Hygiene Index
OHRQL	Oral Health-Related Quality of Life
PHCC	Primary Health Care Centre
SCB	Statistiska Central Byrån/Statistics Sweden
SFS	Svensk Författningssamling/Swedish Code of Statutes
SOC	Sense Of Coherence
SOU	Statens Offentliga Utredning/Swedish Government Official Reports
SOHSI	Subjective Oral Health Status Indicators
QoL	Quality of Life

PREAMBLE

I have worked as a dental hygienist for many years, including nine years in a hospital setting. During this period I encountered many elderly people whose health had been compromised by disease of long standing, resulting in infirmity. In many cases, their oral status had also deteriorated markedly, resulting in a need for extensive dental treatment. As these elderly people became increasingly compromised, daily oral hygiene appeared to be less important, both to the elderly themselves and to their relatives.

Because elderly people nowadays retain their natural dentition, albeit heavily restored or complemented by bridgework or implants, the dental professions are facing a new challenge adopting strategies for managing the dental care of functionally dependent elderly people, to ensure the lifelong maintenance of oral health.

I became increasingly interested in learning more about healthy elderly individuals' attitudes to, and perceptions of, oral health and oral care. Questions arose such as "What happens during ageing and is oral health important for the elderly person's quality of life? Do the medical professionals observe their elderly patients' oral health and oral problems?"

INTRODUCTION

Ageing is a complex, insidious process, with great individual variations. Today in Sweden, the health of the elderly is generally better than that of earlier generations. Living conditions have improved and many people have a more active lifestyle. All the same, the health of the elderly varies widely, mainly due to living conditions earlier in life (Wilhelmson et al. 2002).

In the H70 studies in Sweden, oral health and oral care have been followed in a thirty-year perspective. It has been shown that, from 1971/72 to 2002, the number of teeth increased from an average of 13 teeth to 21 teeth in 70-year-olds with natural teeth. In addition to an increase in the number of teeth, there are more restored and endodontically treated teeth, as well as fixed prosthodontic restorations or implants (Ahacic et al. 1998, Österberg & Steen 2004) and edentulousness decreased from 52% in 1971/72 to eight per cent in 2002. This positive change has had a major impact on dental health care, as the need for regular oral health care and prevention in dentate individuals increases with age (Österberg & Steen 2004). This agrees with other studies which have shown that oral problems and dental diseases are increasing in individuals above 80 years of age (Lundgren et al. 1995, 1996, Ettinger 1997; Hugosson et al. 2005).

One Swedish study reported that, for 88-year-olds who lived in their own homes, the percentage of dentate individuals was higher than for those who lived in institutions. The elderly people who were functionally or mental disabled had more oral problems, more difficulty handling their oral hygiene and utilised the dental services less regularly than others (Lundgren et al. 1995).

Other studies showed that it was more common for elderly individuals to visit primary care providers than dental professionals (Frenkel et al. 2002; Coleman 2003). Elderly individuals are less inclined to complain about oral or dental conditions unless they are in pain and many oral diseases therefore remain both under-diagnosed and untreated (Preston et al. 1999).

The fastest growing group of elderly people is made up of people aged ≥ 85 years. High age is associated with an increased risk of chronic disease and multiple medications. Many of the drugs produce a dry mouth as a side-effect. The patients for whom a nurse cares today are older individuals and nurses should play an active role in their oral health care (Coleman 2003).

Medically complex elderly individuals with insufficient oral health indicate the need for interdisciplinary training to increase the degree of understanding of the medical and dental

complexity of these elderly people; this includes the entire life situation of these patients (Pyle et al. 2003).

Health

General health

In the literature, two main concepts of health emerge - naturalistic/biomedical and humanistic. The naturalistic/biomedical concept consists of a pathogenic perspective (WHO ICIHD 1980), while the humanistic concept consists of a holistic and salutogenic perspective and is based on the promotion of well-being (Antonovsky 1979, Berg & Sarvimäki 2003).

Health, from a holistic perspective, is more than merely the absence of disease or infirmity. It is a state of physical, mental and social well-being and is directly related to the fulfilment of human needs (WHO 1948, Nordenfelt 1991, Darby & Walsh 1995, Medin & Alexandersson 2000). The WHO extended the definition to include health as a resource which can realise wishes, satisfy needs and enable the individual to change and interact with his/her surroundings (WHO 1986).

Oral health

Oral health has been described from a naturalistic/biomedical perspective (Nordenfelt 2003) and has often been referred to as the absence of oral disease (Sundberg 2003). In this sense, oral health may be described as good oral function: functional remaining teeth and the absence of infection, pain and mouth dryness (SOU 2002:53).

One of the WHO Global Goals for Oral Health 2003 is that the dentition of people aged 65 to 74 years should comprise at least 20 teeth. The overall goal of the National Dental Service Act (SFS 1985:125) is “good oral health” for everyone; that dental care should be accessible to the whole Swedish population. No definition of “oral health” is included in this legislation. In a more recent document, Dental Care to 2010 (SOU 2002:53), “oral health” is described as freedom from pain and few carious lesions, good chewing ability and acceptable aesthetics.

An individual’s oral health and overall health can be assessed objectively or subjectively. Objective assessments are based on clinical examinations by professionals such as a physician, dentist, district nurse or dental hygienist. The alternative is an individual, subjective evaluation. These two perspectives are both important in compiling a comprehensive picture of the individual’s current condition and for learning more about how to improve human health, oral health and well-being (Report 96:9; Report 98:7). Oral health is not limited to the management of dental caries and periodontal diseases but is a subjective

experience, perceived in the context of the individual's environment. Individuals apply a multi-dimensional view to assess self-satisfaction with general and oral health (Gilbert et al. 1998).

Quality of life

Quality of life (QoL) is a complex concept, related to the subject's feeling of well-being and satisfaction. An individual's opinion of quality of life reflects his/her personal experiences (Naess 1987). Sarvimäki (1995, 2000) defined QoL as a sense of well-being, meaning and value. People of different ages, functional conditions and cultures may have quite different views of what makes life good. Nordenfelt (1991) described the concept of QoL as happiness and being in accordance with the individual wish for how things should be. External conditions can contribute to or prevent the realisation of life goals and affect the experience of quality of life. Although the concept is subjective, some factors are common to many individuals and they are important in measuring QoL. Health, as well as social relationships, appears to be strongly related to QoL (Nordenfelt 1995).

In a study of elderly subjects' different perceptions of QoL, Berglund & Eriksson (2003) showed that living a good life and not being a burden to their family or society were the most important factors.

Hellström et al. (2004) reported, in a study of elderly people living at home with and without help, that elderly people who received help with their daily living had more self-reported diseases and symptoms and experienced poorer QoL than those who were independent. Loneliness, depression and pain were related to poor QoL. In order to provide a complete picture, assessments of health-related quality of life (HQoL) are usually based on physical, psychosocial and existential factors (Allison et al. 1997).

Oral diseases and dissatisfaction with the mouth and teeth can affect general health and QoL and the connection between oral health and QoL is often multidimensional. It can be seen from a professional point of view and from the subjects' point of view, which do not always correlate (McGrath & Bedi 1999, MacEntee et al. 1997, Atchison et al. 1993).

Self-care

The need and demand for self-care varies. Deficiency occurs when the need exceeds the individual's capacity. At this stage, professional care and support are required to complement individual effort. Professional instructions and advice should be tailored to the individual's inherent ability, resources and current physical capacity. Self-care signifies the activity,

participation and empowerment of the individual, not the passive acceptance of care (Orem 1979, Dean 1989, Kickbusch 1989). Backman & Hentinen (1999, 2001) showed in their studies that self-care must be based on the subjects' functional capacity and their tendency to accept life as it comes and that self-care that does not function corresponds with poor life satisfaction and low self-esteem. Self-care is not a separate part of elderly people's life; it is closely associated with their past life and with the future. As an activity, self-care is not just a rational way to maintain one's health. The manner of carrying out self-care reflects the elderly people's overall attitudes to health care, illnesses and manner of living.

Self-care comprises activities initiated by the individual and carried out by him/her to maintain good health and well-being. The ability to carry out self-care is highly individual and depends on the individual's present capacity.

Empowerment

Empowerment originates in a holistic perspective and every human being is seen as an aware and active creature. Information and increased knowledge in every encounter between the patient and the professional is a prerequisite for empowerment. The individual is given responsibility and the professional adapts his/her approach accordingly. It is a process that is formed to enable the patient to develop the knowledge, ability, attitudes and awareness needed to assume responsibility for his/her own behaviour and health-related decisions. Empowerment is based on belief in the capacity of the human being: patients are expected to assume control of their diseases and treatment whenever possible and the function of the professionals is to encourage or enable them to do so (Salmon & Hall 2004).

There appears to be a relationship between health, self-care and empowerment and this relationship is complex. Health, self-care and empowerment are linked at different levels such as individual, community and organisation (Lewis & Urmston 2000).

Both the patient's ability to participate in the decision-making process and the nurse's ability to share control and power are important. A Swedish study has shown that there are differences between the needs of the nurse or the organisation and the needs of the patient. The opportunities to exercise self-determination must be taken seriously and the patient must be respected for his/her own opinions, even if they are not in full agreement with the professionals' decisions. This is the opposite of a paternalistic approach. The patient must be given opportunities to take responsibility for him/herself, which is one of the central goals in Swedish health care (Sahlsten et al. 2005).

Ageing

Growing old

During the process of growing old, the individual perception of health may change. A study by Nilsson et al. (2000) showed that growing and feeling old was a transitional process. It pointed out the following four main properties, fear of helplessness, fear of being unable to manage one's life situation, fear of not recognising one's former self and feeling different from others. Another study (Berg et al. 2005) showed that health for elderly patients was related to the family and the social network which created identity and the feeling of belonging to somebody and also represented a safety net, somebody to care about and somebody that cares about you. Health was also connected with being or not being able to perform various activities, physically, mentally and socially, such as the activities involved in daily life, gardening, babysitting.

Growing old can be associated with restraints, such as reduced mobility and impaired sight and hearing. There is also an increased risk of chronic diseases and the need for medication. Both the disease in itself and its symptoms and the drugs used in treatment can affect oral health and function.

The elderly and oral health

Today, the elderly have more remaining teeth and the number of edentulous individuals is decreasing. It is predicted that, by 2015, 95% of 65- to 74-year-olds and 90% of 75 to 84-year-olds will be dentate (Österberg et al. 2000).

Elderly individuals with natural teeth have few dietary restrictions imposed by difficulty chewing and they therefore have prerequisites for a normal nutritional status. For frail elderly dentate individuals, however, poor oral hygiene and insufficient diet can lead to the development of malnutrition, as well as oral problems and diseases in their remaining teeth (Locker 1992, Steele & Walls 1997).

Mouth dryness is a common condition among the elderly (Nederfors et al. 1997). Associated symptoms are bad taste, a burning sensation on the tongue and other parts of the mouth and discomfort and pain from removable dentures. Locker (1993) showed that individuals suffering from mouth dryness experienced problems with eating, chewing and talking and were dissatisfied with their oral health.

Chewing disability and poor oral health are reported to have a negative impact on elderly people's general health and quality of life (Österberg 1990, Locker 1993, Strauss & Hunt

1993). Locker (1997) showed that tooth loss was associated with deterioration in self-perceived oral health.

Ethic

The Swedish National Health Service Act (SFS 1982:763) and the Swedish National Dental Service Act (SFS 1985:125) state that care and treatment should be based on information and on the right to self-determination and responsibility. The goal for health and oral care should be based on respect for the individual's autonomy and integrity.

Autonomy and integrity

Independence and information are important in the care of all individuals when it comes to autonomy and integrity. The concepts of autonomy, integrity and dignity are included in Swedish national legislation governing health and dental care (SFS 1982:763, SFS 1985:125). Dignity and respect are important for people of all ages (Calnan et al. 2005). This is of special importance when caring for the elderly. The dignity of elderly patients is upheld when their autonomy is supported and their integrity is protected (Rander & Mattiasson 2004). There is an ongoing debate within the care of elderly about how best to respect the elderly in daily care and how to avoid violating their dignity (Nordenfelt (a,b) 2003).

In the education and training of different staff groups, it is important to emphasise the complexity of autonomy and integrity. This is especially important in the interaction with vulnerable elderly patients who are not able to protect and maintain their own autonomy and integrity (Kihlgren & Thorsén 1996).

Regulations

The ÄDEL reform (DS 1998:27) was introduced on 1 January 1992. The aim of this reform was to comply with the Social Welfare Service Act (SFS 2001:453) and the National Health Service Act (SFS 1982: 763) in terms of security, freedom of choice and integrity when caring for the elderly and the handicapped. The Social Welfare Service Act focuses on social security and welfare, while the National Health Service Act focuses on health and health care.

The National Dental Service Act (SFS 1985:25) was designed to promote oral health for all citizens and states that dental care should be available equally for the whole population, regardless of age, gender or social status. According to Swedish legislation, the county councils are responsible for the planning of all health care, including dental care.

Since 1 January 1999, the National Dental Insurance Scheme (SFS 1998:1337) has included specific financial support for persons in institutional care, in particular oral hygiene and dental care support. This means that patients in geriatric institutions are offered oral health assessments free of charge once a year. If dental care is necessary, treatment can be provided up to the high-cost protection cap, which in February 2004 was set at SEK 900 a year.

In addition to the National Dental Insurance Scheme, “Better dental insurance for the elderly” a special insurance was introduced in 2002, giving people of 65+ an increased high-cost protection cap (SOU 2001:36). The purpose of this reform was to improve oral health, reinforce basic dental care for the elderly and improve accessibility to treatment (SOU 2002:53). Otherwise elderly individuals pay for dental care in the same way as every other adult, which means that the cost to the individual can be very high (SFS 1998:1337).

The dental hygienist’s perspective

According to the American Dental Hygienist Association (ADHA 1993), the dental hygiene profession embraces the following major concepts: “Client, Environment, Health/Oral Health, Dental Hygiene Services” (June 1992). These four concepts can be defined, developed and expanded in numerous ways for conceptual models of dental hygiene.

A human needs theory (Maslow 1970) emphasises an holistic perspective: that the behaviour relates to a striving to stay well and change dissatisfaction. This theory was selected as the theoretical framework for the dental hygiene conceptual model because of the characteristic patient-centred approach and because of the essential contributions to oral health and to overall quality of life. The dental hygienist primarily views the patient as being actively involved in the process of care: in order to attain and maintain a status of oral well-being, the patient must undertake self-care. Rather than being passive recipients of care delivered by a dental professional, patients are encouraged to participate and to make choices about their oral health care (Darby & Walsh 1993, Walsh & Darby 1993, Darby & Walsh 1995).

As described above, the promotion of health and well-being is based on the individual ability to control current and future health. The Oral Health-Related Quality of Life Model (OHRQL model) postulates that the environment, socio-culture and economy influence the continuum of health and diseases, which have an impact on the patients’ lives and affect their perceptions of quality of life (Williams et al. 1998).

The scientific perspective

This thesis combines two scientific perspectives, the natural-scientific and the humanistic-scientific, illustrated in Table 1. This may appear to be contradictory, but the two perspectives are in fact complementary. In this thesis, the reason for choosing both quantitative and qualitative methods was the nature of the research problem.

The scientific perspective correlates to two distinct methodologies; quantitative and qualitative. The quantitative focuses on diseases and the result can be controlled and measured. The qualitative focuses on exploring social events as experienced by individuals in their natural context and a deeper understanding of the phenomenon (Malterud (a) 2001).

The task of the professional in medicine and dentistry is two-fold, to understand the patient and to understand the disease. To understand medicine as a narrative activity enables physician and patient to shift the focus of medicine to the case of what ails the patient. Qualitative methods are useful for research into human and social experiences, communication, thoughts, attitudes, all core components of clinical knowledge (Malterud (a, b) 2001).

From a dental hygienist perspective with a patient-centred focus, it was natural to use both quantitative and qualitative designs for the studies in this thesis.

Table 1. Different scientific perspectives (model, KA)

The natural/biomedical scientific perspective	The humanistic scientific perspective
Focus on population/individual	Focus on the individual
Quantitative method	Qualitative method
Seeking primarily an explanation	Seeking primarily an understanding
Emphasis on disease processes/pathogenic	Emphasis on health/ill-health/salutogenic
Objective	Subjective

AIMS OF THE THESIS

The general aim of this thesis was to investigate perceptions of oral health among elderly persons and within related medical professions.

The specific aims were to study:

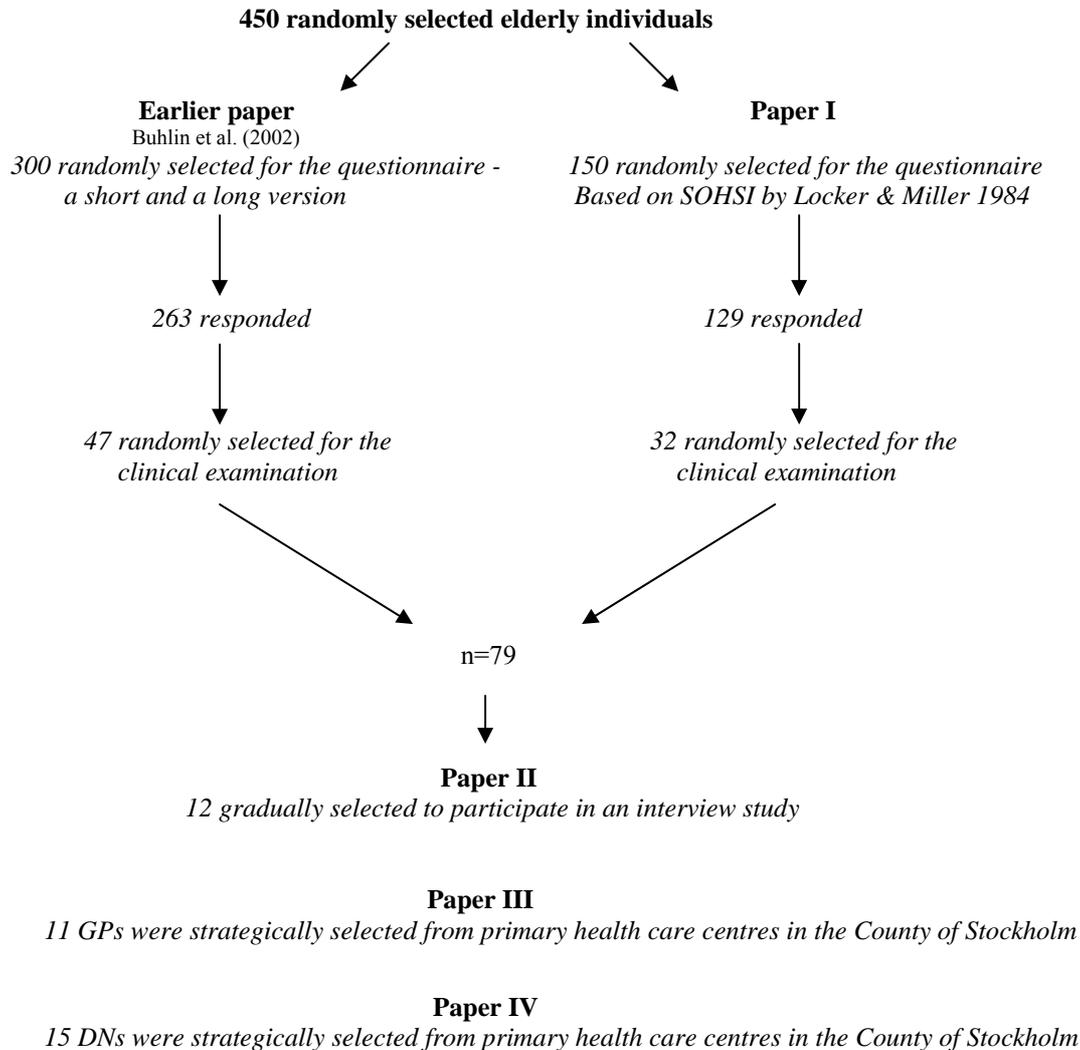
- Self-reported oral health and function in a group of adults aged 75-84 years and how it correlates with clinical findings
- Perceptions of oral health among community-dwelling elderly people and how it has been affected through life
- General practitioners' perceptions of the oral health of their elderly patients
- District nurses' perceptions of the oral health of their elderly patients from the DNs' perspective.

SUBJECTS AND MATERIALS

Population Papers I-IV

The subjects and sampling are shown in table 2.

Table 2. The population in Papers I-IV.



During the spring of 2000, 450 individuals (15%), aged between 75 and 84 years, were randomly selected from the total population (2910) of this age group in the Municipality of Huddinge. The inclusion criterion was that the individuals should be living independently.

Three hundred of these 450 individuals (10% of the total population) were randomly selected to participate in the study entitled “Validity and limitations of self-reported periodontal health” by Buhlin et al. (2002). The response rate was 263/300, 87%. Of the 263 individuals who answered the questionnaire, 47 (18%) were selected at random and invited to participate in the clinical examination, in Paper I.

Paper I

The total of 150 individuals (5% of the total population) was randomly selected to participate in Paper I. The response rate in this group was 129/150, or 86%. The dropouts are shown in Table 3. Of the 129 individuals who answered the questionnaire, 32 (25%) were selected at random and invited to participate in the clinical examination.

Table 3. Paper I dropout

Gender	No reason	Did not want to participate	Living in a nursing home (excluded)	Deceased (excluded)	Disability/ handicap	Language difficulties	All
Women	3	4	1	1	1	1	11
Men	6	3	0	1	0	0	10
All	9	7	1	2	1	1	21

Paper II

From the total number of 79 individuals aged 75-84 years (Table 2) who had participated in the clinical examination, 12 individuals were gradually selected, because of their interest in the topic, and they were successively contacted by mail and telephone. In the group of 79 participants, six individuals were taken from the 47 individuals and six individuals from the 32 individuals in the clinical group. They were informed verbally and in writing about the purpose of the study and the fact that participation was voluntary. All the individuals agreed to participate in the interview study.

One participant had been diagnosed with dementia and was excluded from the study because the interviewer was unable to interpret the validity of the proxy answers.

Paper III

The sample in this qualitative study was strategically selected on the basis on gender and geographical spread and consisted of 11 general practitioners (GPs) in primary health care centres (PHCC). The sampling goal of the method was to create a heterogeneous group of GPs with experience of elderly patients and their oral health. The GPs were responsible for out-patient care and worked together with district nurses (DNs).

The GPs were informed verbally and in writing about the purpose of the study and the fact that participation was voluntary. All the contacted individuals agreed to participate in the interview study and preferred the interview to take place at their office at the PHCC.

Paper IV

The sample in this study was strategically selected on the basis of gender and geographical spread and consisted of 15 DNs at PHCCs. All the DNs were women. The DNs were responsible for home-care nursing, open reception and they all worked together with GPs. The sampling method aimed to create a heterogeneous group of DNs with experience of elderly patients and their oral health.

They were informed verbally and in writing about the purpose of the study and the fact that participation was voluntary. All the individuals agreed to participate in the interview study and preferred the interview to take place at their office at the PHCC.

METHODS

The thesis is based on four studies, referred to in the text by their Roman numerals (I-IV). Both quantitative and qualitative research methods have been used, Table 1.

Design

This thesis relied on a combination of quantitative and qualitative data collection and analysis. The data were collected through questionnaires, clinical examinations, interviews as narratives, semi-structured interviews and open-ended interviews. A design overview of Papers I-IV is provided in Table 4.

Quantitative method

Quantitative research methods provide confined access to clinical knowledge. They incorporate questions and phenomena that can be controlled, measured, counted and analysed by statistical methods.

Paper I has a natural perspective and focuses on self-reported oral health in comparison with objective clinical examination. The selection method was based on a questionnaire (see Appendix 1) and clinical variables. The self-reported answers were compared with clinical findings and were analysed using statistical analysis. The aim was to compare agreement and differences between self-reported oral health and clinical variables.

Qualitative methods

Qualitative research methods refer to theories of interpretation and human experience. They include various strategies for systematic data collection and the organisation and interpretation of textual data obtained by talking to people or through observation (Malterud (a) 2001).

The qualitative interview method can be described as a specific professional conversation and focuses on a specific topic in the interaction between the researcher and the interviewees during the interview and the analysis. The research interview looks for knowledge about the interviewees' perceptions through their narratives and the researcher attempts to obtain a rich variety of expression, diversity and variation in the interviewees' narratives (Kvale 1997).

Larsson (1994) states that the "fact" always depends upon the chosen perspective and the researcher's pre-understanding that must be accessible to critical examination. The researcher's pre-understanding represents previous personal and professional experiences and perspectives on the field of research (Malterud (b) 2001).

Paper II has a humanistic perspective, with the aim of obtaining a deeper understanding of the way elderly people perceive their oral health and oral care and how this has changed over a lifetime. To capture this internal perspective, interviews were conducted in the form of conversations with a number of individuals. The narratives reflected oral health during the elderly persons' lives. An interview-guide model (see Appendix 2) was used as a tool to focus on the phenomenon of "oral health". If the topics in the interview-guide model did not arise spontaneously, the interviewee was asked supporting open-ended questions.

Papers III-IV has a humanistic perspective, focusing on two different professions, in Paper III GPs and in Paper IV DNs, who were working with elderly patients at PHCCs in the County of Stockholm.

The interviews were based on an interview guide (see Appendix 3). The interviews started with semi-structured questions and concluded with open-ended questions about the respondents' experiences and perceptions of the oral health of their elderly patients aged between 75 and 84 years.

The aim was to obtain a deeper understanding of the way GPs and DNs perceived the oral health of their elderly patients.

Table 4. Design, data sources, analysis and conclusions in Papers I-IV

Paper	Period	Design	Population	Data sources	Statistics/analysis	Conclusion
I	2004	Quantitative	150 randomly selected individuals, aged 75-84 years (76 women and 53 men)	Questionnaire	Descriptive statistics	Most subjects report satisfactory chewing ability. Mouth dryness is “over-reported” and bleeding gums are “under-reported”.
		Clinical examination	32 individuals who responded to the questionnaire, aged 75-84 years (15 women and 17 men)	Clinical examination One dental hygienist	Comparison between self-reported oral function and objective clinical findings	There was good agreement in both groups with respect to chewing ability and bleeding gums but not for mouth dryness.
II	2004	Qualitative	12 gradually selected individuals, who participated in the clinical examination, aged 75-84 years (6 women and 6 men)	Interview, planned as a conversation Used an interview model	Phenomenological-hermeneutic method inspired by Giorgi. The analysis process has four steps: sense of the whole, meaning unit, expressed unit, transformed unit, synthesis	The elderly are generally satisfied with their oral health. Memories and personal factors affect attitudes to and perceptions of oral health.
III	2006	Qualitative	11 strategically selected general practitioners (5 women and 6 men), at primary health care centres in the County of Stockholm	Interview, a semi-structured part and a open-ended part Used an interview guide	Grounded theory inspired by Strauss and Corbin. The analysis process was performed in three steps: open, axial and selective coding	The GPs in this study showed little or no awareness of the oral health of their elderly patients. In the future, appropriate routes for co-operation must be considered.
IV	2006	Qualitative	15 strategically selected district nurses (all women), at primary health care centres in the County of Stockholm	Interview a semi-structured part and a open-ended part Used an interview guide	Grounded theory inspired by Strauss and Corbin. The analysis process was performed in three steps: open, axial and selective coding	The DNs in this study showed some awareness of their elderly patients’ oral health, but there were several obstacles preventing them from grasping the wholeness of nursing care.

The connection between Papers I-IV

The research was empirical and started from an inductive viewpoint. Paper I was designed to elucidate the elderly persons' self-reported oral health in comparison with the dental professional's examination.

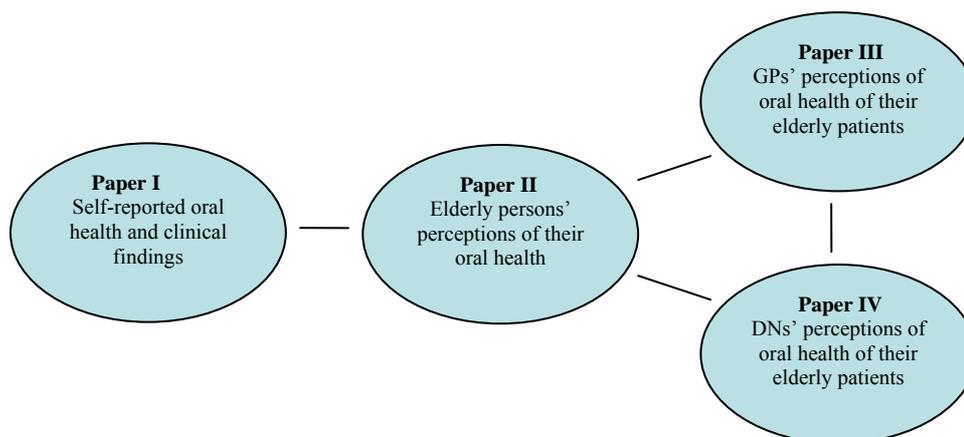
The in-depth interviews in Paper II were an illustration of these elderly persons' experiences of oral health and dental care through life.

It became important to investigate the medical professionals' perceptions of the oral health of their elderly patients; because the previous study revealed that the elderly persons frequently consulted GPs and DNs at the PHCCs.

The in-depth interviews in Paper III with GPs and with DNs in Paper IV presented the GPs' and DNs' perceptions of the oral health of their elderly patients.

The flow chart of the connection between Papers I-IV is shown in Figure 1 below.

Figure 1. Flow chart of the connection between Papers I-IV



Paper I

In Paper I, interest focused on elderly persons' self-reported oral health and function compared with clinical findings relating to chewing ability, mouth dryness and bleeding gums. A questionnaire was used, based on an assessment tool, Subjective Oral Health Status Indicators (SOHSI), developed and used by Locker & Miller (1994). The original questionnaire in English contained eight domains and was translated into Swedish, word by word. The Swedish version used in this study contained six questions about chewing ability, one about mouth dryness and one about bleeding gums, as well as questions about gender, age, country of origin, educational level and civil status (Appendix 1).

One dental hygienist performed the clinical examinations. Before the study, the dental hygienist received detailed instructions about the clinical variables and underwent calibration. The clinical examination included the following parameters: number of remaining teeth including roots and presence of dentures, measurement of pocket depth with a Hu-Friedy (PCPUNC-15, Hu-Friedy, Liemen, Germany) calibrated periodontal probe, assessment of hygiene index (HI index), bleeding on probing (BOP), tooth mobility and dry mouth.

The HI index (%) assessed the presence or absence of plaque at the gingival margin along the mesial, buccal, distal and lingual surfaces (Love et al. 1975). To assess bleeding gums, the tip of the probe was gently moved along the gingival margin. Gingival inflammation was noted as BOP and expressed as the percentage of bleeding sites of the total number of sites in the dentition (Ainamo & Bay 1975). Dry mouth was assessed as mucosal friction using the back of a mouth mirror that was drawn along the inside of the cheek and friction was registered according to a three-point scale (Henricsson et al. 1990).

Paper II

In Paper II, in-depth interviews were conducted with the elderly persons focusing on their own perceptions of their oral health and its impact on their well-being. The phenomenological-hermeneutic method was chosen to obtain a deeper understanding of the specific phenomenon of oral health from their perspective. They had the option of being interviewed at home or at the dental school in Huddinge. A separate room, in a small library, was used at the school. Two interviews took place in the respondents' homes and the rest were conducted at the school. The interviews were planned as conversations on the topic of "oral health", with special reference to the interviewees' attitudes to and perceptions of oral health and oral care throughout their lives. The interviewees were encouraged to talk freely and to describe their personal experiences of oral health and oral care. The narratives reflected the phenomenon of oral health over time and were contextual.

Phenomenological-hermeneutic method

The phenomenological method was presented by Husserl at the beginning of the 20th century (Husserl 1989). His idea was to develop a scientific method that, from "*the things themselves*" as they are shown in the subject's experiences, would be one base for knowledge. He stated that the life-world of the immediate experience is always predetermined and is already there. This is what we take for granted, the foundation of our activities, experiences and perceptions and in the world we are in, in everyday life.

Giorgi (1985, 1997) developed a method of analysis based on how the phenomenon appears through the subjects' descriptions of their daily lives. This method was developed for psychological research but can, according to Giorgi, be applied in other fields (2000).

Papers III-IV

In Papers III and IV, the research continued with in-depth interviews with GPs and DNs who worked at PHCCs in the County of Stockholm. The interview was conducted in the form of a conversation and was based on the interviewees' own expressions. The interview guide was used as support to ensure that all the domains of health and oral health among their elderly patients were covered. The interview started with semi-structured questions about the respondents' education and professional experiences, followed by questions about their elderly patients' clinical presentation, medication, medical treatment and socioeconomic status. The interviews concluded with open-ended questions about the respondents' perceptions of the oral health of their elderly patients. The purpose of using open questions was to provide an opportunity for personal statements and reflections on working conditions and appointments with their elderly patients, who were mainly independent and aged between 75 and 84 years.

Grounded theory method

GT has its roots in symbolic interactionism, which maintains that phenomena in the social world should be investigated from the perspective in the context in which these phenomena naturally occur. The method can be used to explore a new and unfamiliar research area where theories are lacking or to bring new knowledge into a familiar field (Glaser and Strauss 1967).

Strauss and Corbin (1990, 1998) introduced new procedures in GT data analysis in order to help the researcher to think systemically about the data and how categories are linked to each other.

Theoretical sensitivity is a term frequently associated with GT and it refers to a personal quality of the researcher. It refers to the attribute of having insight, the ability to give meaning to data, the capacity to understand and the capacity to separate the pertinent from that which is not (Strauss and Corbin 1990, 1998).

The fundamental principles are the simultaneous collecting and analysing of data in parallel, while the theoretical sampling involves constant comparison to identify as many differences and similarities as possible. With a constant comparative approach, the data are effectively analysed and a grounded theory develops. The selection process is strategic to ensure a broad

sample with maximum variation. The method is not designed to guarantee that two independent researchers will achieve the same results, even with identical data. Theoretical saturation, although somewhat “subjective”, is reached when new data do not add additional information to the emerging categories or when new data fit into the categories already devised. The data collection is then terminated (Strauss and Corbin 1990, 1998).

Data analysis

Statistical analysis in Paper I

In Paper I, the significance of the differences between the respondents’ answers about chewing ability was calculated with Fisher’s exact test. This test was chosen because the sample was small and the expected values were less than 5. In order to allow cross-calculation, the data were stratified according to the number of remaining teeth, into two groups: those with ≤ 15 teeth and those with ≥ 16 teeth. The data were stratified into subjects with dentures and those without.

When making the comparison, the clinical variables which had undergone calibration were used. The self-reported oral health and oral function were compared with the clinical findings.

Analysis inspired by Giorgi in Paper II

In Paper II, the interviews were analysed using the phenomenological-hermeneutic method inspired by Giorgi (1985).

To obtain the essence, all the interviews in Paper II were reflected upon and compiled into dimensions of the phenomenon of “oral health and its meaning in relation to earlier and current lifestyles”. This phenomenon appears through the individual’s lived experiences and the researcher’s interpretation of the narratives.

The interviewee must have time to describe his/her own view and the researcher should understand the person through the professional world in which the researcher lives. The researcher’s pre-understanding is an essential factor and the features from the subjects’ narratives are brought together with the concepts of the discipline in question into a more general context (Häggman-Latila 1999). The interpretation comprises a dialectic between the meaning in the naive understanding and the objective meanings found in the structural analysis.

The analysis of data was performed in four steps. 1. The first step involves obtaining a general sense of the whole by reading the entire text. When the whole is grasped at a naive level, the researcher goes back to the beginning and reads the text with a specific focus on the

phenomenon. 2. In the next step, the text is divided into smaller meaning units as a discrimination of the phenomenon expressed entirely in the subjects' language. 3. The next step involves transforming the subjects' everyday expressions in the expressed meaning units into the researchers' language, with the emphasis on the phenomenon that is being focused upon. 4. Finally, a more advanced understanding is obtained by synthesising the insights into a consistent description of the structure of the phenomenon. All the transformed meaning units must be taken into account when synthesising specific descriptions.

The interviews lasted 60-90 min and were tape-recorded and transcribed verbatim, by KA, in a total of 248 pages. The data were analysed independently by two researchers (KA and GN). The outcome of every interview was discussed until consensus was reached, before proceeding to the next interview.

From this, a general structure can be formulated to obtain the essence of the phenomenon that is being studied, the constituents and their relationships that reveal the most comprehensive invariant meaning of the phenomenon (Giorgi 1985).

Analysis inspired by GT in Papers III-IV

In both Papers III and IV, data collection and data analysis were carried out in parallel and simultaneously and the analysis started after the first interview. The analysis was inspired by Strauss and Corbin (1990, 1998).

The analysis process can briefly be described in three steps: open coding, axial coding and selective coding. In the first step, the open coding process, the transcribed interviews were analysed line by line and broken down into segments reflecting the substance of the data, i.e. substantive codes/concepts, related to the research question. The substantive codes were given names close to the data, i.e. using words expressed by the respondents. Codes with the same content were grouped together to form categories on a more abstract level. In the second step, axial coding, subcategories were related to their categories along the lines of their properties and dimensions. In the third step, selective coding, connections between categories were sought and the core category was systematically identified. The core category is central to the data and is related to all the categories and represents the main theme of the research.

The interviews were conducted by KA, lasted 45-60 minutes and were audio-taped and transcribed verbatim by the interviewer, in Paper III a total of 143 pages and in Paper IV a total of 252 pages. Each transcribed interview was read and discussed with the main supervisor (GN), before the next respondent was contacted.

The collection and analysis of data were carried out in parallel. This process started with the first interview and proceeded until saturation, i.e. no new information was forthcoming.

Ethical considerations

All the studies were approved by the local ethics committee (Registration Number 403/99 and 146/01) and complied with the Helsinki Declaration – the 41st World Medical Assembly, Hong Kong, September 1989 (<http://onlineethics.org/reseth/helsinki.html>).

The participants were adequately informed, verbally and in writing, about the aims and methods and the fact that they were at liberty to abstain from participation in the study and were free to withdraw their consent to participate at any time. All the participants gave their informed consent before inclusion. After transcription, all the interviews were replaced by codes before the data were analysed. The quotations were carefully selected to ensure confidentiality.

RESULTS AND COMMENTS

Self-reported oral health and clinical examination

Paper I

Self-reported oral health and function compared with clinical examination were not always in agreement.

Self-perceived chewing ability was strongly related to the number of remaining teeth. Subjects with more than 16 remaining teeth experienced no limitation in chewing. This finding is in accordance with previous studies of the relationship between the number of remaining teeth and chewing ability. Nordström (1990), Steele et al. (1997) and Gilbert et al. (1998) have reported that natural teeth are associated with greater dietary freedom of choice and nutritional status.

The remaining teeth, if neglected, can also be a source of problem, including high levels of dental diseases associated with poor oral hygiene (Steele & Walls 1997). Locker (1997) showed that tooth loss was associated with both deterioration and improvement in self-perceived oral health. The perceptions of tooth loss depend on the condition and functional status of the lost teeth and/or their position within the dental arch. Limitations in chewing were associated with age and dental status, such as the number of remaining teeth and the function of dentures (Locker & Miller 1994). Among the denture wearers, 50% reported good chewing ability and subjects with dental implants were satisfied with their oral function, in terms of chewing hard, leathery meat and fresh bread. Among the dentate, those with one or more removable partial dentures were more likely to be dissatisfied than those without any dentures (Jokovic & Locker 1997). Ettinger & Jakobsen (1997) showed that older subjects more frequently expressed complaints about lower dentures, such as loss of retention and poor appearance. There were fewer complaints about upper dentures.

Many of the subjects in the present study claimed that they suffered from mouth dryness. This was not confirmed in the clinical examinations. Previous studies by Nederfors et al. (1997), Ship (1999) and Cassolato & Turnbull (2003) have shown strong associations between dry mouth and increasing age and between mouth dryness and long-term pharmacotherapy. Mouth dryness was greater in older subjects and in women and the probability increased with the number of medications taken. The complaint of dry mouth is more common among elderly individuals and it is more attributable to systemic disease than to normal ageing (Nederfors et al. 1997).

The sensitivity in terms of gingival bleeding was low. All the subjects in the clinical examination group bled on probing, while the answers in the questionnaire shown low knowledge about bleeding gums among the elderly. The clinical examination was built on a sensitive method, BOP (Ainamo & Bay 1975).

Elderly persons' perceptions of oral health and quality of life

Paper II

Many of the subjects had grown up in the provinces, in large impoverished families. Unemployment and World War II marred their adolescence. During the immediate post-war period, the welfare state expanded and the economy improved.

Free dental care was not available to the interviewees as children and regular dental care during their school years was uncommon. In 1974, the National Dental Health Insurance Scheme was introduced, with the overall goal of making comprehensive dental care available to all citizens (SOU 1972:81). Many elderly subjects had received no dental health education and many of the interviewees had unhappy memories of school dental care and few had owned toothbrushes as children.

Later in life, when the respondents grew up and found employment, they established regular dental attendance habits. Oral health, oral function and appearance became even more important after retirement. Almost all the respondents had regular contact with a dentist and a dental hygienist. They had become aware of the importance of good oral hygiene and self-care.

The interviewees were generally satisfied with their present oral health, oral care and self-care. Almost all the respondents discussed their experiences of growing old and they all underlined the importance of managing by oneself and avoiding becoming dependent on others. The subjects emphasised the importance of control over their oral health and self-care. A previous study (Backman & Hentinen 2001) showed that elderly individuals' functional capacity, life satisfaction and self-esteem may be assumed to be both components of self-care and factors associated with it. Self-care was related to positive attitudes towards life. This is in accordance with Antonovsky's concept of sense of coherence (SOC) (1979, 1987), which is an individual strategy for coping with life situations and diseases. Empowerment involves assuming control of one's life. The subjects' own resources are reinforced and the professional supports the individuals' efforts to assume control of their health (Salmon & Hall 2004).

The subjects in the present study described the importance of good oral health in the social, physical, emotional and mental aspects of their daily life. Some of the female subjects used tablets or lozenges to prevent bad breath and mouth dryness when mixing socially.

The subjects were worried about growing old and thought about who could help them when their oral self-care did not work. Some had friends and relatives who needed home-help service and the staff did not help the elderly with oral hygiene.

Medical professionals' perceptions of elderly patients' oral health

Paper III

The result in the first part showed that the GPs met elderly patients with different kinds of health problems; they reported a high level of mental problems among elderly patients. An increasing in age-related ailments and diseases occurs at the age of 80-85 years.

In the second part the result disclosed potential barriers to closer alignment of the general and oral health perspective and the existence of a cultural gap between the disciplines of medicine and dentistry, which influenced the behaviour of the GPs.

The category, *health perspective*, which relates to elderly patients' ailments, diseases and drugs and treatment, is often complex. The elderly patients go to a PHCC when they have defined health complaints and depending on impaired medical status, this is in accordance with other studies (SBU 1999; Akner 2005). Normally the elderly patients make an appointment at a dental care centre just for an examination; they think that their oral health is good (Hugosson et al. 2005; Folkhälsorapport 2005). The GPs conduct an oral examination only in exceptional cases; oral problems were seen as a matter for the dental team. The elderly patients themselves seldom asked GPs about oral health and oral problems.

The category, *working situation*, relates to GPs' working conditions: the work load felt heavy and they were forced to focus on the most important aspects within their specialist field. They did not ask, but they thought that autonomous elderly people had well-established contact with the dental teams.

The core category, *cultural differences*, relates to knowledge, network and organisation related to the GPs' perceptions of the elderly patients' oral health. To increase the degree of understanding of the medical complexity of elderly patients, interdisciplinary training that considers the whole patient will be required. New models for the curricula in dentistry, medicine and allied professions must be developed (Pyle et al. 2003). All health professionals need to work towards integrated health care that is effective for the general and oral health needs of their elderly patients (Berkey & Shay 1992; Isman 1993; Frenkel & Lurie 2002). The

organisation has changed and the GPs' role has changed and requires more emphasis on organisational, social and financial aspects, and the work load for the individual GP could become overwhelming, this in accordance with an earlier study (Arnman 2004). It is natural for the GPs to have well-functioning contacts with various specialists within health care, but no dental services are included.

Paper IV

The result in the first part showed that the DNs had contact with elderly patients both at open reception and through the district home care involved in visiting the elderly at home to distribute medication, injections, catheters, bandages and advice. The elderly patients were generally about 80-90 years old. Many of the oldest patients preferred to come to open reception at the PHCC instead of being visited by the DN at home.

The DNs observed that elderly people about 80 years of age reported a deterioration in health and for some of the oldest, those aged 90 years and over, the DNs reported a rapid deterioration. Many elderly patients had more than one diagnosis, often several: the most common complaints were cardiovascular symptoms, joint and muscle pain, diabetes, depression, sleeping problems, anxiety, stress and osteoporosis, while loneliness and isolation were frequent problems. The elderly patients used many drugs and the control of medication was seen as inadequate.

The DNs were unfamiliar with most of the special dental regulations in the new remuneration system for the elderly in Sweden (SFS 1998:1337).

The second part explored the DNs' perceptions of their elderly patients' oral health. The core category that emerged from the present data was labelled *indistinct professional duties* and related to three categories; *professional role*, *obstacles for the DN* and *insight into the DN's profession*.

The respondents talked about their professional role and were ambivalent about what caring should include. Nowadays, the DNs have to focus on their responsibility for medication, which can sometimes be experienced as overwhelming. They acted as an intermediary in the contact with physicians and passed on important information about the elderly patients. The respondents focused on medicine, the municipality was responsible for caring and the dental service was responsible for oral health.

The obstacles to good district nursing were described as frustrating. The DNs lacked time and were therefore unable to perform their duties as caring experts. Different organisations for elderly care were said to be a troublesome factor in the care of the elderly.

The respondents talked about wholeness, integrity and empowerment and they were aware of the fact that oral health had an impact on elderly patients' general health and well-being. They mentioned that the integrity of the elderly patients was perceived as a barrier to talking about their oral health and oral problems. The DNs felt that health care and dental care were different professions and they thought that the elderly patients felt the same way.

DISCUSSION

The percentage of elderly people is increasing rapidly in Sweden and a similar trend is reported in all the industrialised countries (The National Public Health Report 2001). At the same time, edentulousness is decreasing among elderly persons in Sweden and elderly people with remaining teeth have more fillings, crowns and bridgework (Ahacic et al. 1998; Österberg et al. 2000), which is leading to an increase in the need for regular preventive oral health care for the elderly (Hugosson et al. 2005)

Oral health is one of the domains of health and can affect the overall feeling of health. The elderly persons in these studies said that oral health and oral function were very important for their quality of life. Oral problems such as chewing ability, problems communicating and appearance can affect life satisfaction; this is in accordance with previous studies (MacEntee et al. 1997; Locker et al. 2000; Steel et al. 2004).

Methodological considerations

This thesis relied on a combination of quantitative and qualitative research perspectives and the triangulation of methods of data collection and analysis. For the purpose of the research questions in this thesis, the two methodological perspectives are seen as complementary. By combining these perspectives, the researcher wishes to shed light on the way oral diseases relate to the elderly individual's perception of his/her own oral health and function.

Paper I used quantitative methods to investigate agreements and discrepancies between self-reported oral health and clinical findings. To do this, a questionnaire and clinical examination with defined variables were used. Paper II sought to deepen the understanding and bring out more nuances of the subjects' perception of their oral health and function by using qualitative methodology. In narrative interviews, the elderly persons were asked to share their perceptions of oral health through their life, which provide a deeper understanding. In-depth interviews were also used to collect data for Papers III and IV. In these cases, the purpose was to obtain an understanding of the contextual issues of the medical professionals' perceptions of their elderly patients' oral health.

The researcher as a research instrument in qualitative research

The researcher's background, experience and professional perspective will affect the choice of research. In qualitative studies, the researcher him/herself can be regarded as a research instrument, as the interpretations are based on pre-understanding. Pre-understanding is brought into the research by the researcher, representing previous personal and professional experience and perspective related to education and interest (Malterud 1998; (b) 2001).

It is important to outline the researcher's pre-understanding of the questions addressed in this thesis. The researcher has worked as a dental hygienist, with individuals of all ages. During nine years in a hospital setting, she met elderly individuals, who had been compromised by diseases of long standing. The pre-understanding has therefore both breadth and depth and has also been a key motivation factor for undertaking the present research.

The participants were acquainted with the dental hygienist profession, which may have had an impact on the narratives, but none of the elderly individuals or the professionals was dependent on or had had professional contact with the researcher.

Subjects

The participants in the studies were selected in two ways. The participants in Paper I were randomly selected from the total population (2.910) aged 75-84 years in this age group in Huddinge. The inclusion criterion was that the individuals were living independently. There were 21 subjects who refused to answer the questionnaire and that could have had some impact on the result. The participants in Paper II were gradually selected from the group of 79 elderly who participated in Paper I and an earlier study. During the collection, focus was to obtain gender spread and find individuals who could express important thoughts about their oral health in their life world. One participant was not able to answer herself; her husband did the talking for his wife in the interview. During the analysis process, this participant was excluded from the study.

The GPs in Paper III and the DNs in Paper IV were strategically selected in their professions and participated in the interviews. The purpose was to find professionals with reflections over elderly patients' oral health who could take time to talk about the topic. A strategic collection was chosen instead of the snowball recruitment usually used in GT; the focal point was to obtain gender and geographical spread in the County of Stockholm. Interest focused primarily on the way they handled oral health during their meetings with elderly patients at the PHCC.

The researcher was well known to the elderly participants in Papers I and II, as a dental hygienist, but she was unknown to the professionals' interviewees in the context in Papers III and IV.

None of the interviewees appeared to be distracted by the tape recording; they all agreed and said that they thought it made it easier to capture the essence of their narratives. The narratives were usually fairly detailed, indicating that the conditions during the interviews induced confidence.

Questionnaire and clinical findings

In Paper I, a questionnaire was used to disclose the self-reported oral health of the respondents, compared with a professional clinical examination and findings. The clinical examination was carried out by an experienced dental hygienist (KA) and no radiographs were taken.

The questionnaire that was used was based on a questionnaire, Subjective Oral Health Status Indicators (SOHSI) developed by Locker & Miller (1984), which had been used in earlier studies of elderly individuals. The original version contained eight domains and in Paper I three domains were chosen because the answers were to be compared with special clinical findings.

Using a questionnaire to compare self-reported oral health and function with the result of a clinical examination is one way to obtain knowledge about the agreement or discrepancy between self-reported oral health and function and how it is perceived through the professional examination.

Paper I showed good agreement between the subjects' own account as given in the questionnaire and the findings in the clinical examination. One example of this is the case of self-reported chewing ability as compared to the number of teeth and presence of removable dentures. However, there were two important discrepancies between self-reported oral health and clinical findings. The subjects reported perceived mouth dryness to a greater extent than was shown by the clinical examination. One conclusion from this discrepancy is that the mirror test is not sensitive enough to identify subjective perceived mouth dryness. Another finding was that there was a discrepancy regarding the occurrence of gingival bleeding. The subjects reported it to a lesser extent than was shown by the clinical examination. One possible explanation of this discrepancy is that the subjects might suffer from impaired vision, a common condition among elderly persons, making it more difficult for them to detect gingival bleeding.

Validity of questionnaire and clinical findings

As mentioned above, one important goal in Paper I was to obtain knowledge about the way the result of clinical examinations relates to the individuals' own perception of their oral health and function. For this purpose, the answers to a questionnaire were compared with the results of clinical findings.

Paper I focused on the validity of both the questionnaire used as a method for measuring subjective accounts of oral health and function and the methods used in clinical examinations to obtain an objective account of the same phenomena. If agreement between the two methods is seen as an indication of a high level of validity, it could be said that both the questionnaire and the clinical examination produced valid results in most cases. As presented above, however, there were discrepancies in two cases mouth dryness and gingival bleeding that challenge the validity of both methods used independently. This result points to the importance of using the triangulation of methods when researching oral health and of developing communication as a clinical tool in treatment.

Interviews

In Papers II, III and IV, interviews were used to disclose the perceived experiences and perceptions of the respondents. Qualitative methods are useful for studies of thoughts, attitudes and perceptions, especially when related to interaction and interpretations (Malterud a 2001), where interviews are one way of collecting data (Kvale 1997).

In Paper II, the interview was planned as a conversation, narratives on the topic of *oral health*, with special reference to the interviewees' attitudes to and perceptions of oral health and oral care through the elderly individuals' lives. An interview guide was designed as a model in order to create an open, relaxed dialogue, but at the same time to focus on the phenomenon of *oral health*. The introductory question was: *Can you tell me about your own experiences of oral health throughout your lives?*

All the interviewees were motivated to give their narratives. They were happy to participate in the study and they said that oral health and oral care were very important for them.

In Papers III and IV, the interview guide in the first part was semi-structured and the second part was open ended. The interviews were selected in order to create an open, relaxed dialogue but at the same time to focus on the topic of *elderly patients' oral health from a professional perspective*.

In the study with GPs, the interviewees observed that medicine and dentistry had a different view of health and disease. They look for disease or diagnoses and want to treat the illness,

whereas the dental professionals are looking for oral health and the patients come for check-ups and not only for treatment. As a result, the interview guide was modified in order to obtain a better understanding among the GPs and DNs during the interview.

The semi-structured part was used to obtain a view of the elderly patients' at the PHCCs diseases, diagnosis and medication and the open-ended part of the interviews was planned as a conversation, but not with the time-flow perspective like the narratives in Paper II. Papers III and IV focused on the interactions within the respondents' professional contexts. All the interviewees wanted to do the interviews at their PHCCs and they were comfortable about the interviews being taped.

Analysis

The analysis method in Papers II, III and IV is based on qualitative analysis methods. The interviews were transcribed verbatim by the author (KA), making the content of the interviews easier to recall and simplifying the analysis. The literature describes various approaches to handling transcriptions. Malterud (1998) found several good reasons for the researcher to do the transcriptions, even if this is time consuming. One reason is that the researcher recalls different moments of the interview and this may improve the understanding of the data in the context. On the other hand, Kvale (1998) argues that, while it can be of value for the researcher to do the transcription, the time devoted to this can be used for more urgent aspect of the research.

In Paper II, a phenomenological-hermeneutic method, inspired by Giorgi (1985), was chosen to analyse the narratives to find the individuals' perceptions about oral health in their life world.

In Papers III and IV, the first part of the interviews was semi-structured, which provided knowledge about the field. This part was analysed with references to descriptive answers. The GT method inspired by Strauss and Corbin (1990, 1998) was chosen in the second part of the interview and the data collection and the analysis were done in parallel, to explore how the concept of oral health occurs in the various contexts and how the professions co-operate when it comes to the elderly patients' oral health.

The main difference between the two methods is that, in the phenomenological-hermeneutic research method, the narratives are personally oriented over time, but in GT the concepts are related to the context in which the subjects interact with other individuals.

The concepts of authenticity and trustworthiness in qualitative research

Within qualitative research, the researcher has to be critical about data and analysis. The researcher always enters a field of research with certain opinions about what it involves. Reflexivity starts by identifying preconceptions brought into the study by the researcher and can be maintained by looking at the data, or its interpretation, to find competing conclusions. The qualitative researcher's task is to explain the ingredients of the preconceptions and he/she must also have an open mind towards systematically obtained material (Malterud 1998, b 2001).

Trustworthiness, adequate and sufficiently varied data, consider who and what the findings concern. The relevance, "the red yarn", is the logical chain between the purpose and the result. The researcher's ability to communicate the research has an influence on knowledge validity (Malterud 1998, b 2001).

The present qualitative studies were based on data collected from a gradually selected group of elderly people with different views of oral health in Paper II and transcribed from an extensive amount of transcribed text totalling 248 pages. After 11 interviews, no new information was found and similar opinions and stories recurred in the narratives. One additional interview was performed. In Paper III a strategically selected group of GPs at PHCCs and in Paper IV a strategically selected group of DNs at PHCCs with different perceptions of and attitudes to their elderly patients' oral health in a professional context were included and the interviews were transcribed from an extensive amount of transcribed text totalling 143 and 252 pages respectively. In Paper III saturation of developing categories was deemed to have been reached after collecting and analysing 9 interviews and in study IV after 13 interviews. Two additional interviews in each study were performed in order to ensure that conceptual weaknesses in the developing theories were compensated for.

The researcher has her history and this may constitute a risk and a scientific weakness. As a result, all the interviews were performed by KA and subsequently analysed by KA in close collaboration with supervisor GN and senior researchers representing different scientific disciplines. The correspondence between the theoretical concept and its indicators is reflected in quotes from the interviews.

The purpose was to produce new knowledge and information that can be shared and applied beyond the study settings (Malterud (a) 2001). It is to be hoped that the combination of both quantitative and qualitative methods in this multidisciplinary thesis will produce new insight into factors and processes involved in the oral health of elderly persons.

General discussion

Elderly persons in Sweden who need a certain level of medical and health care are included in the National Dental Insurance Scheme (SFS 1998:1337). This entitles them to an annual oral health check-up free of charge. Further more their necessary dental care is included in the high-cost scheme for healthcare.

One major obstacle to meeting the needs of the elderly who live at home is the fact that the National Dental Insurance Scheme (SFS 1998:1137) is often interpreted as only including those individuals receiving institutional care. However, the legislation clearly stipulates those individuals who lives independently but have a certain level of home care and home nursing also are covered by the insurance. In many cases, the GPs and DNs who participated in these studies were unaware of the existence of a National Dental Insurance Scheme for the elderly and who was included in it. The right to dental care under the National Dental Insurance Scheme should be included in the evaluation of need conducted by the case managers in the county when they plan the home care and home nursing required by elderly persons living at home. This is not done today.

Today, there are more and more elderly people, with different kinds of diagnosis, ailments and dependence on nursing care and medicine in their homes, and it is therefore important to give information to all professionals associated with the elderly about the National Dental Insurance Scheme (SFS 1998:1137).

One important factor when it comes to maintaining the best possible oral health in ageing is the importance of noticing and meeting oral health needs when general health deteriorates. Up to this point, the elderly people who participated in these studies indicate that they are able to take care of their oral needs by themselves. According to the GPs and DNs who participated in this thesis, the patients who receive home nursing have most contact with the DNs. Prior to this, most patients have their GP as their primary contact at the PHCCs. The GPs in Paper III saw the elderly patients who received home nursing less often than other elderly patients. This finding is in agreement with Modin and Furhoff (2002) in their study of the medical care of elderly people receiving home nursing. They also found that the elderly people who received home nursing met their GPs less often than other elderly individuals. In home nursing, the GPs' work instead focused on supporting the DNs.

The DNs in Paper IV saw the elderly patients who received both care at open reception and home nursing. This point to the importance of supporting the DNs to observe and meet the oral health needs of home-care patients. For this purpose, close collaboration between DNs and dental hygienists could be useful. The reason why dental hygienists are most suitable is

their focus on promoting and enabling self-care, as well as preventing deterioration in oral health.

The number of elderly people is increasing, with more individuals suffering from many diseases and being dependent on drugs living in their own homes. This highlights the necessity for interdisciplinary training and collaboration among health professionals to promote oral health and improve the oral health and quality of life of elderly individuals.

The results of this thesis also underlines the need for further research to better understand elderly people's view of their own oral health and how it relates to quality of life, as well as what they think about health and oral health in relation to ageing and their overall health and well-being in the process of ageing. The interviews showed that neither the elderly nor the professionals at the PHCCs thought it was natural to include oral health and oral problems in discussions of general health, treatment and medication.

This finding, in combination with the fact mentioned above that it is primarily the DNs that have contact with elderly people living at home and receiving home care, points to the need for an enhanced understanding of the different professional contexts in order to enable multidisciplinary co-operation to achieve the best care for elderly patients. One important research area therefore comprises factors to increase interdisciplinary competence across health professions, including medicine, dentistry and nursing.

CONCLUSIONS

Important conclusions in this thesis are as follows.

- There were discrepancies between the clinical findings and the self-reported oral health. In relation to the clinical findings, mouth dryness was “over-reported” and bleeding gums “under-reported”. However, there was agreement between the ability to chew and the number of remaining teeth. Most of the elderly persons in this study reported satisfactory chewing ability.
- The elderly persons in this study were generally satisfied with their present oral status. When the interviewees spoke of oral health, it included function, as well as social and psychological aspects that influenced their living situation and relationships with others. However, they were worried about growing older and losing their ability to live independently. They worried about who was going to take care of their oral health if they became disabled and unable to take care of themselves.

To create better conditions for improving the oral health of the elderly, it is important to listen to their perceptions and develop tools to communicate the importance of self-care and regular contact with dental care.

- The GPs were unaware of the oral health of their elderly patients. They perceived cultural differences between medicine and dentistry.
- The DNs reported several obstacles that prevented them from taking responsibility for the whole nursing care around an individual. They perceived oral health and oral problems as belonging exclusively to dentistry.

Improved understanding and co-operation between GPs and dental teams, as well as between DNs and dental hygienist, is necessary to improve oral health and care which is important to enhance the well-being of the elderly.

IMPLICATIONS

The present data pave the way for further studies investigating factors of relevance in developing tools to create individual programmes for promoting oral health and preventing the development of oral disease in elderly individuals.

In this context, it is important to address the following questions:

- How do case managers perceive the importance of oral health in the elderly and how do they experience their role in promoting oral health?
- How could co-operation between dental hygienists and other health professionals be organised to promote better oral health in old age?

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Table 1. Questions on oral health presented to 129 participants in the study.

1. Chewing ability

Are you usually able to:

Chew a piece of fresh carrot?

Bite off and chew a piece of whole fresh apple?

Chew firm meat such as steaks or chops?

Chew fresh bread?

Chew fresh lettuce salad?

Chew boiled vegetables?

Response format: yes/no

2. Mouth dryness

In the last four weeks have you had the following problem:

Mouth dryness?

Response format: yes/no

3. Bleeding gums

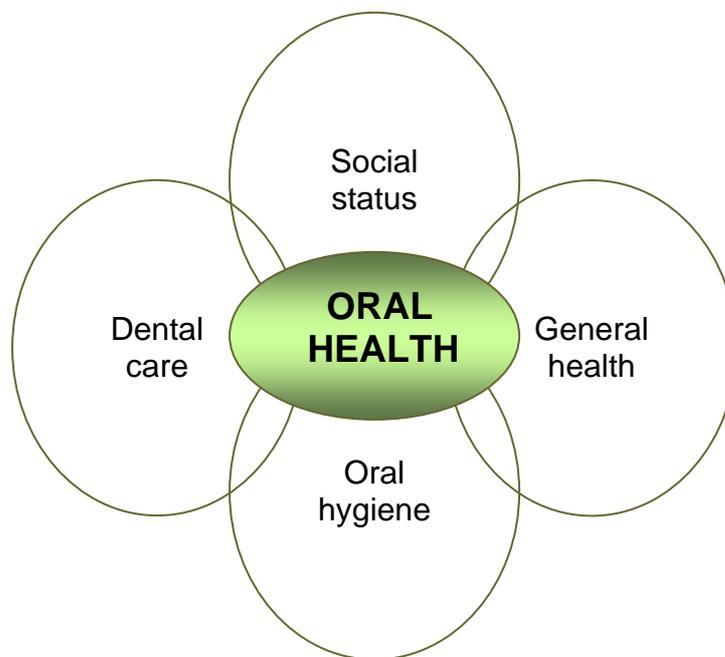
In the last four weeks, have you had the following problem:

Bleeding gums?

Response format: yes/no

Appendix 2: Interview guide used in Paper II

A guide model of inter-related constituents of the phenomenon 'oral health' used as support for the interviewer



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Appendix 3: Interview guide used in Paper III- IV

Interview guide GPs and DNs

Part I

Background factors:

Gender

Age

How long have you been working as a GP/DN?

- other work experiences:

The GPs'/DNs' perception of the elderly patient's life situation?

How many people would you estimate that you meet?

- Over the age of 65
- 75 and over
- Come regularly
- Have an immigrant background

How do you perceive:

- The elderly people's need for care?
- The elderly people's social situation?
- The elderly people's economic situation?

Disease panorama

In your experience, which is the most common illness?

Does this disease panorama change among the patients who are 75 and older?

Medication

Elderly people often consume a large number of drugs.

- Which are the most common among your elderly patients?
- Do you inform them about side-effects such a dryness of the mouth?
Yes Sometimes Seldom Never

GPs/DNs contacts

Do elderly patients go to several doctors?

Yes No

How common do you think this is?

Very common Fairly common Rarely Never

Do you collaborate with GPs/DNs?

Very common Fairly common Rarely Never

How does this collaboration function?

Do you collaborate with other professions?

Very common Fairly common Rarely Never

Dental insurance

Are you aware of the different insurance schemes for dental care for the elderly?

- The reform to dental care support of 1 January 1999
- Visiting activities – county council’s responsibility – for elderly people and people with functional disabilities living at special units for service and care or those who receive home nursing.
- Offer annual assessments of oral health and individual advice free of charge
- Offer annual training to the health care staff employed by local authority
- Plus necessary dental treatment for elderly people and people with functional disabilities being cared for by the local authority for the same cost as that applied in our-patient health and medical care – i.e. SEK 900 during a period of 12 months
- Improved dental care support for the elderly – 65+

Yes Have heard of it No

Part II

General health and oral health

What do you include in the concept of general health?

What do you include in the concept of oral health?

How do you perceive the oral cavity in relation to the body?

Do you usually notice if elderly patients have oral problems?

- What do you normally see?
- What do you do?

Do you normally document this in the patients notes?

Do elderly patients discuss oral problems with you?

- If they do, what problems do they normally bring up?
- Do you normally document them?

Do you see any connection between oral health and general health among the elderly?

Do you see any connection between oral disease and diseases in the rest of the body?

Collaboration between health and dental care

Do you collaborate with dental care staff?

- With dentist and/or dental hygienist?
- Is it easy to make contact when you need to?
- When do you think there might be a reason to contact the dental service?
- When do you think there might be a reason for the dental service to contact you?
- Do you think this collaboration functions?

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