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ORIGINAL ARTICLE

Public dental health care program for persons with disability

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Abstract
The objectives of the study were (1) to describe the organization and content of the Danish public oral health care program for persons with disability, and (2) to analyse possible variations in relation to the goals and requirements set by the health authorities. Data were collected by means of self-administered questionnaires completed by the person responsible locally for the program in each municipality. The response rate was 84%. The following topics were included: (1) Number of persons attending the program, (2) procedure for identification of persons eligible for the program, (3) payment of service, (4) providers of oral health care, (5) special training of staff, 6) dental services delivered, (7) ethical issues, and (8) patient rights. Less than one-third of persons estimated by the health authorities were enrolled in the program. On average, 0.4% of the municipal population attended the program, ranging from 0.03% to 1.53%. In large municipalities, and where internal providers delivered oral health care, relatively more persons were enrolled in the program ($p < 0.001$). Overall, more than 20 categories of personnel were involved in the selection procedure; attitude and lack of knowledge of oral health and oral health care for persons with disability were barriers to equal access to the program. Preventive dental services were the most frequent services delivered, although relatively few oral hygienists were involved in the program. Special training was most frequent in large municipalities. To secure equal access for persons with disability, it is recommended that joint collaboration between smaller municipalities should be made regarding procedures of such programs. Special training of dental personnel and of the staff responsible for selecting persons for the program should be systematically organized at a higher administrative level. The pattern of dental services delivered justifies further involvement of oral hygienists in the program.

Key Words: *Access, dental care, dental services, persons with disability*

Introduction

Persons with physical and/or mental disability often depend on the care and practical support of other people. Moreover, they often appear to have low levels of self-care in oral health and make poor use of oral health services [1–3]. They may be older people, residents in nursing homes, or live in their own homes supported by assistance from professional caregivers. In general, many disabled elderly people have difficulties utilizing the oral health services because of practical or financial barriers [4,5]. In 1994, with the Act on Dental Health Care, it became constitutional in Denmark that, irrespective of age, adult persons physically or mentally disabled to a degree that they could not use the current dental care system should be offered a special oral health care program under the auspices of the local municipality [6]. It was estimated by the health authorities that approximately 100,000 would be eligible for the program [7]. The Danish Act on Dental Health Care forms the basis for the supply of oral health services to the total Danish population. Accordingly, the overall goal of the Danish dental care system is that "the population is to develop appropriate oral health habits and optimal level of oral health throughout life through regular dental care practices combined with use of systematic preventive and curative services" [6]. In regard to oral health care for people with disability, the health authorities have developed specific directives and guidelines which seek to meet "realistic treatment need", with consideration given to age, general health, and the patient's own expectations and needs [7]. The program is to be implemented under the authority of a dentist; however, "it would be relevant to involve dental hygienists for the program, as preventive services are a considerable

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part of the program". The program should consist of the following elements: Preventive activities on the individual and group level directed at patients and professional caregivers; oral examinations made in accordance with patients' individual needs or demands; and necessary treatment to comprise treatment of symptoms, diseases, and dysfunctions in teeth, mouth, and jaws, including necessary prosthetic treatment [7]. According to directives from the health authorities, only individuals disabled to a degree that they are dependent on professional assistance in daily life, and whose level of self-care is so limited that they cannot use the current oral care system, should be offered the opportunity to participate in the program. People living in nursing homes, or in their own homes with a similar low level of self-care as nursing home residents, are target groups for the program, irrespective of age. Mentally disordered persons are also to be offered the chance to participate in the program if their level of self-care keeps them from using the current oral health-care service [7].

Many old people with disabilities receive medication that causes symptoms such as dry mouth and reduced chewing ability [8], and if these groups have poor oral hygiene in addition, they may be at high risk of contracting oral mucosa lesions, dental caries, and periodontal disease [2,3,9,10]. Other studies of this vulnerable group have shown that an increasing number of individuals are dentate [2,3,11], and that oral diseases are common among homebound persons and others dependent on practical support in oral hygiene procedures [3]. Studies of dental health personnel indicate that some dentists do not feel capable of providing dental care for this group of patients, especially if has to take place outside their dental office [12–14]. Oral care for the elderly disabled also involves other professional caregivers or staff in nursing homes. Positive attitudes towards oral health care of nursing homes residents were found in a Danish study of caregivers [15]; however, other studies point to the need for systematic oral health education of caregivers due to gaps in dental knowledge [16]. The relevance of coordination of work and interdisciplinary activities in oral health care is emphasized [10,17–20].

In Denmark, the public oral health care program for the disabled was established in 1994, but little information is available about the process of implementation and outcome of the program. The aims of the present study were to describe the organization and content of the Danish public oral health-care program for persons with disability and to identify and analyse possible variations in relation to the goals and requirements of the program set by the health authorities.

Material and methods

The study targeted all 275 Danish municipalities. A self-administered questionnaire addressed to the chief executive of the local health authorities requested the person responsible for oral health care of persons with disability to complete the questionnaire. It was pretested in eight localities by chief dental officers of the Public Oral Health Care Service.

The questionnaire focused on the following areas: (1) Number of citizens attending the program, (2) procedure for identification of persons eligible for the program, (3) payment of service, (4) providers of oral health care, (5) special training of the staff, (6) curative and preventive dental services delivered, (7) ethical issues, and (8) patient rights. Data on the number of inhabitants were validated against the data from official public statistics [21], and processed and analysed using the Statistical Package for the Social Sciences (SPSS Inc. Chicago, Ill., USA). The municipalities were divided into three categories: Large municipalities had more than 20,000 inhabitants, medium municipalities between 10,000 and 20,000 inhabitants, while municipalities with less than 10,000 inhabitants were characterized as small. There were three types of providers of oral health care: (1) internal staff, i.e. staff with permanent appointments in the municipal oral health-care service, (2) external providers, covering dentists in private practice and denturists paid by the municipality or counties, and (3) a third category comprising a combination of (1) and (2).

Univariate and bivariate analyses were performed, and the chi-square test was used for statistical evaluation of differences in proportions. Type of provider of oral health care and size of municipality were independent variables in the bivariate analyses. Means and standard deviations were calculated. Frequencies of dental services delivered were analyzed by tied ranking. The rank score (maximum value = 23 and minimum value = 1) indicates the frequency of each dental service delivered in relation to other types of dental service. Mean rank scores are reported including standard deviations. Variations in mean rank scores were evaluated using a non-parametric statistical method (Kruskal-Wallis test). The tests are indicated in a footnote to each table.

Results

The final response rate was 84% after reminders were sent by mail and telephone. Drop-out of municipalities was not affected by size or location of the municipality. Approximately half of the municipalities were small and almost equal numbers were medium size or large (Table I). One-fourth of the municipalities used internal staff only, while almost 50% used a combination of external and internal staff and almost all respondents reported having introduced user fees (Table I). User fees amount to a maximum of €50 per year.

A total of 26,204 people were reported to benefit from the public oral health care program for persons with disability; 24,141 were 65 years old or more. Overall, 0.4% of the population of responding

Table I. Distribution of municipalities (%) in relation to number of inhabitants, type of provider of oral health care, and payment by user fees for persons with disability

Variable	%
Size of municipality	
Small	45
Medium	30
Large	25
Total	100 ($n=226$)
Providers of oral health care	
Internal staff only	24
Combination of internal and external staff	46
External staff only	31
Total	101 ($n=220$)
Payment by user fees	
User fees	92
No user fees	8
Total	100 ($n=209$)

municipalities ($n=226$) were reported as being covered by the program, ranging from 0.03% to 1.53%. In large municipalities, and municipalities where internal providers delivered oral health care, relatively larger proportions of the population aged 65 years or above were enrolled in the program (Table II). On average, 2.7% of the population 65 years or more participated in the program and 0.04% of the population less than 65 years. In large municipalities, 0.06% of those below 65 years attended the program. For the most part, specially trained nurses or health nurses working in nursing homes were responsible for selecting patients for the program. However, all respondents informed that approximately 20 different categories of staff were reported to be involved in such decisions, including officers from the public administration. In nearly three out of four municipalities, internal staff were involved in providing oral health care for this group of patients. Dentists in private practice and denturists were involved in 53% and 35% of the municipalities, respectively. Furthermore, in a few municipalities, patients covered by the program for service were referred to public health dentists at county level.

The distribution of municipalities in relation to size of municipality and type of provider of oral health care to disabled persons is given in Table III. In all, a response to the question on manpower was received from 194 municipalities. Converted into full-time work hours, the total workforce of the program corresponded to 64 dentists and 19 hygienists.

Table IV summarizes the data on selection procedures, patient rights, and the special training offered to dental staff. This training was more common in large municipalities and less frequent where only external providers carried out oral health care. Letters of complaint from patients or relatives were more frequent in municipalities with external providers of oral health care (Table IV).

Table V indicates the relative frequency of the various dental services delivered. Furthermore, some minor differences were found in the frequency of dental services delivered in relation to type of provider of oral health care. Where internal providers alone were responsible for the program, more preventive services were delivered to the patients, while curative and radical dental services were more frequent where external providers were involved ($p<0.05$).

Discussion

The present study focused on evaluation of an oral health care program organized under the responsibility and administration of local governments in Denmark. For each municipality, a questionnaire was directed at the focal points of the oral health of persons with disability. The person responsible for implementation of the program was asked to complete and return the questionnaire. The response rate obtained was considered high for self-administered questionnaires, although some information bias may have occurred. The questionnaire was pre-tested among experienced dental officers, but some misinterpretation was possible if a respondent had no dental background, especially regarding questions on dental services. This might reduce the validity of data on dental services delivered. In general, information on providers of the

Table II. Mean percentage of citizens 65 years of age or more covered by the public oral health care program for persons with disability in relation to size of municipality and type of provider of oral health care (standard deviation in parentheses)

	Percentage of persons 65 years or more
Size of municipality***	
Small	2.3 (1.5)
Medium	2.7 (1.7)
Large	3.6 (1.7)
Type of provider of oral health care***	
Internal staff only	3.4 (1.7)
External staff only	1.6 (1.1)
Combination of internal and external staff	3.2 (1.6)

*** $p<0.001$ (Kruskal-Wallis test).

Table III. Distribution of municipalities (%) in relation to size of municipality and type of provider of oral health care for persons with disability

Type of provider of oral health care	Size of municipality		
	Small	Medium	Large
Internal staff only	26.8	20.9	23.2
Combination of internal and external staff	33.0	49.3	62.5
External staff only	40.2	29.8	14.3
Total	100	100	100

($p<0.01$ chi-square test).

Table IV. Percentage of respondents who stated certain characteristics of the public oral health care program for persons with disability in relation to size of municipality and type of providers of dental care

Characteristics	Size of municipality			
	Small	Medium	Large	*p*-value
Rules exist for enrolment of patients in the public oral health care program for persons with disability	88.2	90.6	96.4	NS
Written guidelines exist for enrolment of patients into the public oral health care program for persons with disability	69.2	66.1	75.5	NS
Special training of dentists	63.8	73.8	87.3	<0.05
Special training of dental hygienists	30.2	44.1	75.7	<0.001
Special training of chair side assistants	58.6	71.0	85.2	<0.05
Reluctance to working with persons with disability	14.4	20.0	57.4	<0.001
Have received letters of complaints from patients	12.1	8.1	12.7	NS
Have received letters of complaints from patients' relatives	12.1	12.9	23.6	NS

	Type of provider of dental care			
	Internal staff only	External staff only	Combination of internal and external staff	*p*-value
Rules exist for enrolment of patients in the public oral health care program for persons with disability	92.5	87.9	92.0	NS
Written guidelines exist for enrolment of patients into the public oral health care program for persons with disability	52.0	70.2	78.6	<0.01
Special training of dentists	88.5	35.6	85.9	<0.001
Special training of dental hygienists	86.4	8.0	73.5	<0.001
Special training of chair side assistants	82.7	68.8	82.8	<0.001
Reluctance to working with persons with disability	37.3	1.6	38.8	<0.001
Have received letters of complaints from patients	1.9	28.8	4.0	<0.001
Have received letters of complaints from patients' relatives	3.8	32.7	10.1	<0.001

NS = No significance.

oral health care program, the numbers of patients enrolled in the programs, the procedures for selection of patients, the special training of staff, and complaints from clients and their relatives was readily available for those responsible for implementation of the program in each locality. Consequently, such data were regarded as valid and reliable to an acceptable degree.

In 1994, when the Act on oral health care for persons with disability was passed in the Danish Parliament, the health authorities estimated that more than 100,000 would be eligible for the program [7]. This is realistic, since it was based on the actual number of persons living in nursing homes together with the number of people living in their own homes receiving daily assistance from caregivers due to impaired function and limited self-care capacity. Calculations made on the basis of the present data show that, in total, the public oral health-care program for persons with disability might cover no more than 32,000. Compared to patients' average expenditure on dental care, the specific program for persons with disability is a favorable offer to patients owing to the relatively low user fees, and each participant continues to have a free choice of dentist or denturist. Therefore, it is unlikely that a greater proportion of persons eligible for the public oral care program for the disabled would have preferred alternative solutions with possibly higher costs for the patient. One-third of those eligible for receiving oral care through this special program actually attended the program. It appears that being selected for the program is related to size of the municipality and to the type of provider of oral health care. In large municipalities, and in municipalities with internal providers of oral health care, there is a higher proportion of the target group enrolled in the program. In many small municipalities there are no salaried dentists, so use of external providers is the most frequent solution.

The directives for health care set the criteria for enrolment in the program, but the selection of these persons is still based on judgement by the responsible staff of the service administration. Obviously there are great variations in type of disability among potential participants to the program not least in relation to age; however, the main criterion is not the diagnosis of the individual, but whether that person is able to use the existing oral health care system. Staff from many different backgrounds are involved with the selection procedure, though nurses are the most frequent personnel to do the job. Earlier studies have shown that the personnel's own knowledge and attitudes to dental care influence their understanding and support for the client's need for oral care and daily oral hygiene practices [16,17]. Such factors appear to be important barriers in the selection of persons for the program and may in part explain the unequal administration of the

Table V. Relative frequency of various dental services provided (curative and preventive) indicated by mean rank score (max. value = 23 and min. value = 1) (standard deviation of rank score in parentheses)

	Relative frequency of curative and preventive services (maximum = 23 and minimum = 1) (n = 175)
Dental examinations	19.7 (2.8)
Scaling/polishing	19.5 (3.0)
General preventive services (providing patients with information and instruction)	18.4 (3.6)
Individual oral hygiene instruction of personnel	17.3 (3.6)
Repair of dentures	16.6 (3.5)
Fillings	15.7 (3.3)
Fluoride topical	15.1 (5.2)
Individual oral hygiene instruction of patient	15.1 (4.2)
Conservative periodontal treatment	14.1 (4.8)
Stepwise excavation	14.0 (3.8)
Extractions	12.9 (3.6)
Scaling, including scaling of roots and polishing	12.2 (4.7)
Emergency dental care	12.0 (3.6)
Dentures (new)	12.0 (3.9)
Root scaling only	10.4 (4.4)
Oral hygiene instruction of personnel in groups	10.0 (4.5)
Individual oral hygiene instruction of relatives	8.7 (3.6)
Other surgery	7.5 (3.3)
Endodontics	7.4 (3.0)
Crowns	5.4 (3.0)
Bridges	4.6 (2.9)
Periodontal surgery	4.4 (3.0)
Implants	3.1 (2.5)

program across the country. In addition, it has been found in a Swedish study that many nursing home residents are not concerned about their own oral health, while nursing staff have to be responsible for improved oral care for residents [22]. The provision of special education on oral health and self-care to the personnel responsible for the selection of persons to the program might reduce the inequality in access to services.

Several studies have shown that providing oral care for the disabled is considered a difficult and less attractive task [12,13]. This appears partly to be confirmed by the present data, as some reluctance to working with persons with disability is reported. This is also in line with a British study stating that the treatment requirements are simple in nature and match well the technical skills of an experienced dentist, but that managing the patients is difficult, especially the mentally handicapped [14]. Special training of the dental personnel tends to be given priority in large municipalities where internal providers are responsible for oral health care within the program. There are considerable differences by municipality size in the capacity of providing special training for dental personnel. In order to ensure such training in all localities it could be organized at a higher administrative level, perhaps even at national level. Complaints about dental care were most frequent in municipalities using external providers of care; further training of dentists in providing special oral care might reduce such complaints.

In the directives issued by the Danish health authorities it is stressed that the public dental care program for persons with disability should focus on "realistic treatment need" [7]. Several authors have defined "realistic treatment need". Patients' general health status and perceived need should be taken into consideration [19], or a combination of normative needs and patients' perceived need would convey the true needs for treatment [23]. A Swedish study has described what "realistic treatment need" might include in people with disability [24]. In the same study it is found that the realistic oral treatment need is modest within a population of persons with disability, but regular oral screening for oral diseases and oral health prevention is relevant [24]. In the present study, oral examination, scaling and polishing, preventive services and instruction in personal oral hygiene for the staff in nursing homes were the most frequent dental services delivered. This is in line with the health authorities' initial presumptions. On this background, it is surprising that relatively few oral hygienists are involved in the program. Internal dental staff seem more inclined to deliver preventive services, while external staff are more radical and carry out more curative services. As special training is more frequent among internal care providers this might be part of the explanation for such variations. Overall, large municipalities and municipalities with salaried public health dentists seem to have a high capacity and competence for fulfilling the program, in line with the requirements of the Danish health authorities [7]. In order to ensure equal access to and participation in special oral health programs for persons with disability and specific needs it should be considered whether collaborative centers between services of smaller municipalities should be established. Special training of dental personnel as well as staff responsible for the selection of participants and caregivers to persons with disability is essential if high quality services to this target group are to be ensured. It is highly recommended that oral hygienists are involved in such programs as emphasis should be given to preventive oral care.

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