Prevalence of symptoms of craniomandibular disorders in a population of elderly inhabitants in Helsinki, Finland

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The prevalence of symptoms of craniomandibular disorders (CMD) was studied by using a questionnaire in a random sample of 76-, 81-, and 86-year-old subjects living in Helsinki, Finland. Symptoms were reported with lower prevalence with increasing age. Of the total group of 364, 34% reported awareness of one or more symptoms of CMD, but only 2% found their symptoms extremely severe. Thirty per cent reported pains in the head and neck region, and 4% had headache daily. □ *Aging; subjective symptoms; temporomandibular disorders*

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Epidemiologic studies of craniomandibular disorders (CMD) started in the 1970s in Scandinavia, to obtain knowledge of the prevalence and distribution in different ages and between sexes. The results of the investigations in North Finland by Helkimo (1) suggested a high prevalence of symptoms of dysfunction of the temporomandibular joint (TMJ) and the masticatory musculature. Agerberg & Carlsson (2) corroborated these figures in an investigation of the population of Umeå with the aid of a questionnaire. Several other epidemiologic studies of different age groups have since then found that signs and symptoms of temporomandibular joint dysfunction (TMD) are common in the general population, occurring with approximately equal prevalence among men and women (3, 4).

Symptoms of TMD have been found in subjects of all ages. The median value for 18 studies reviewed by Carlsson (3) was 32% for reported symptoms; the variation ranged from 16% to 59%. However, few data are available on the age groups over 70 years. Österberg et al. (5) reported in a longitudinal study that in subjects from 70 to 83 years the prevalence of symptoms of craniomandibular dysfunction decreased with increasing age. This reduction was especially marked in men. The authors concluded that there is no increased risk of TMD among elderly people and that awareness of such symptoms on an average tended to decrease with aging.

The aim of the present epidemiologic investigation was to assess the prevalence of symptoms of CMD in a group of 76-, 81-, and 86-year-old people living in Helsinki, Finland, in 1990.

Materials and methods

This investigation forms part of a large medical survey of a random sample of subjects born in 1904, 1909, and 1914 (total, 8035) and living in Helsinki in January 1989 (6). Between 1989 and 1990, 651 subjects participated in the medical examination. In 1990–91, 600 subjects who were still alive were invited to the Institute of Dentistry for a comprehensive dental examination. Of these, 133 were interviewed by phone or by mail, and no dental data were available for

Table 1. Age and sex distribution in the basic group and the medical and dental study groups

	Basic group, 1989							
	75 years		80 years		85 years		Total	
	n	%	*n*	%	*n*	%	*n*	%
Men	1066	30.3	761	25.7	336	21.5	2163	26.9
Women	2450	69.7	2199	74.3	1223	78.5	5872	73.1
Total	3516	100.0	2960	100.0	1559	100.0	8035	100.0
	Medical study group, 1989–90							
	75 years		80 years		85 years		Total	
Men	73	30.5	59	27.6	43	21.7	175	26.9
Women	166	69.5	155	72.4	155	78.3	476	73.1
Total	239	100.0	214	100.0	198	100.0	651	100.0
	Dental study group, 1990–91							
	76 years		81 years		86 years		Total	
Men	48	29.1	34	32.7	20	21.5	102	28.0
Women	117	70.9	72	67.3	73	78.5	262	72.0
Total	165	100.0	106	100.0	93	100.0	364	100.0

103 subjects. Altogether 364 subjects, of whom 28% were male and 72% female, were examined in 1990–91.

The mortality between the 1 January and September 1989 start of the medical survey was 9.3% ($n = 84$); 2.3% ($n = 21$) had moved to another community or had moved without leaving a new address. The response rate for the medical survey among the remaining group of 795 was 81.8% ($n = 651$) (6). Among the participants in the medical survey the mortality was 8.0% ($n = 51$) before the dental examination started on 31 May 1990. The response rate of the rest ($n = 600$) was 60.7% ($n = 364$). The participation rates were 69% for men, 58% for women, 73% for those living near by, and 50% for those who had to travel furthest. The distribution by sex and age of the random sample and of the participants in the medical survey and the oral examination is given in Table 1.

Symptoms of CMD were assessed on the basis of the anamnestic dysfunction index (Ai) (1). This index is 3-graded: Ai 0 = no symptoms, and Ai I = mild symptoms such as TMJ sounds, feeling of fatigue of the jaws, and feeling of stiffness of the jaws on awakening or on movement of the lower jaw. Individuals are included in index Ai II if they report severe symptoms such as difficulties in opening the mouth wide, locking, luxations, pain on movement of the mandible, pain in the region of the mandible, pain in the region of the TMJ or of the masticatory musculature. Headaches are not included in the anamnestic dysfunction index.

For statistical analysis of the data the chi-square test was used to test group differences in symptoms of CMD.

Results

Of the total group of 364 subjects 30% reported some kind of pain in the head and neck region. The commonest sites were the neck, the ears, the forehead, and the eyes (Table 2). Frequent headaches (once or twice a week) were reported by 16% (Table 3), and daily headaches by 4% of the subjects. The highest prevalence was among

Table 2. Percentage distribution of locations of frequent pains reported by 76-, 81-, and 86-year-old subjects

Locations of pains	%
No pain	70
Neck	14
Ears	11
Eyes	7
Forehead	6
Cheeks	2
Teeth	1
Multiple locations	7

Table 3. Percentage distribution of frequent headache (once or twice a week) in 76-, 81-, and 86-year-old subjects reported in the interview

	Age, years			All subjects
	76	81	86	
Men	23	3	11	14
Women	18	17	12	16
Men and women	19	13	12	16

76-year-olds, particularly in men. Among the 81-year-olds, men reported headache statistically significantly less often than women ($p = 0.05$). There was no such difference in the other age groups (Table 3).

The percentage distribution of mild and severe symptoms of dysfunction is presented in Table 4. There were no major or statistically significant differences between the sexes and between different age groups except for TMJ pain, which was more frequently reported by women ($p = 0.05$) than by men in all of the examinees.

Table 4. Percentage distribution of symptoms included in the anamnestic dysfunction index (Ai) for 76-, 81-, and 86-year-old subjects

Mild symptoms	
Temporomandibular joint sounds	14
Feeling of fatigue of the jaws	2
Feeling of stiffness of the jaws	2
Severe symptoms	
Pain in the region of the TMJ*	8
Pain on movement of the mandible	5
Difficulties in opening the mouth wide	3
Locking or luxations	3
Pain in the masticatory musculature	2

* TMJ = temporomandibular joint.

According to Helkimo's anamnestic dysfunction index (Ai), 66% of all subjects were subjectively symptom-free (Ai 0), 14% had mild symptoms (Ai I), and 20% had severe symptoms (Ai II). Women reported symptoms significantly more frequently ($p < 0.1$) (14% mild and 23% severe) than men (15% mild and 12% severe) (Table 5). Although 34% of all the subjects reported symptoms of TMD, only 2% reported that their symptoms were extremely severe.

Discussion

The advantages and disadvantages of using a questionnaire as compared with personal interviews in epidemiologic investigations have often been discussed (2, 7, 8). Rieder

Table 5. Percentage distribution of anamnestic dysfunction index (Ai) in 76-, 81-, and 86-year-old subjects

	76 years			81 years			86 years			All		
Ai	M	W	M + W	M	W	M + W	M	W	M + W	M	W	M + W
0	64	62	63	80	62	68	83	66	70	73	63	66
I	19	14	15	10	19	16	11	9	9	15	14	14
II	17	24	22	10	19	16	6	25	21	12	23	20

M = men; W = women.

(9) found clear differences between the results of investigation when made by personal interview, by questionnaire, or by clinical examination. He recommended a combination of these three methods. In a pilot study done by questionnaire, because of their advanced age some subjects had difficulties in understanding all the questions without further explanations; the interview was therefore conducted using standardized questions. The advantage was that the influence of the interviewer was reduced, and questions that had not been understood could be explained to the older subjects.

Several epidemiologic studies have reported differences between men and women in the prevalences of headaches and facial pains (2, 10–13). In a study of 70- to 83-year-old Swedish people, frequent headaches (>1–2 days a week) were reported more often by women than by men up to an age of 79 years, but at age 83 both sexes had a similar low prevalence of 5–6% (5). In Ostrobothnia, Finland, women reported pain in the neck, shoulders, and the area of the face and head more often than men (14). In an Israeli study of 61- to 90-year-olds the prevalence of headaches once a week or more was 17.8% (15). The results in the present study are along the same lines.

Variation in the use of definitions of signs and symptoms of CMD sometimes makes it difficult to compare results from different studies. Common symptoms of masticatory dysfunction have included limited range of mandibular movement, masticatory muscle pain, TMJ pain, TMJ clicking or crepitus, and pain with jaw movement (1). Therefore in the present study the symptoms included in the anamnestic index were used (Table 4).

The prevalence of symptoms of dysfunction (34%) among elderly subjects was in agreement with previous figures reported earlier for groups with about the same or slightly younger age (1–3, 16). In a recent study from Sweden 46% of cohorts of 70-year-olds reported at least one symptom of dysfunction, but only 30% of the 75-year-olds (5).

In the present study the prevalence of symptom-free subjects on the basis of the response to the questions included in the Helkimo anamnestic index system increased in the older age groups, particularly in men (Table 5). This confirms the results of Österberg et al. (5) who reported that there was a tendency in three cohorts of 70- to 83-year-olds for subjects on an average to report fewer symptoms with increasing age and that this trend was stronger in men than in women. The men at age 83 had no pain in the face region or on chewing or on opening the mouth wide. Similar findings, an increasing percentage of symptom-free subjects in older age groups, have been presented by Salonen et al. (13). In a population of 75- to 94-year-old nuns the prevalence of symptoms of dysfunction was not associated with age (17).

The differences in prevalence of the symptoms between the sexes were small. Similar results have been given by Österberg et al. (5), who reported that there are no significant differences between the sexes but that the trend of symptoms decreasing with advancing age is stronger in men than in women. At age 83, four-fifths of the men and three-fifths of the women answered that they had no symptoms. Several other epidemiologic studies of different age groups have suggested that symptoms of TMD occur equally often in men and women (2, 18).

Although 34% of all subjects reported symptoms of TMD, only 2% reported that their symptoms are remarkably severe. In a Swedish sample 7% of all subjects reported had been treated for dysfunction (19). Heløe reported in 1980 (20) that only a minor part of a Norwegian population sought and needed specific treatment of CMD. In studies involving patients of dentists in the USA, similar results have been found (11, 21). Salonen et al. concluded in 1990 (13) that in the Swedish population a specific treatment need for masticatory system problems is rather limited. In a Swedish sample in 1990 16% of the women and 9% of the men considered themselves to be in need of treatment (22). The results of these studies suggest that the transitory character of the symptoms inhibits the impulse to resort to treatment. Clinical experience also suggests that old people undergo all sorts of pain and

develop many strategies to cope with their loss of mobility (23).

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