The occurrence of TMJ-disorders in an elderly population as evaluated by recording of «subjective» and «objective» symptoms

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The occurrence of «objective» symptoms of TMJ-disorder, as measured by clinical examination, and self-reported «subjective» symptoms, were investigated in a survey of 241 persons aged 65–79. This group constituted the participants of a sample which was drawn to cover all persons in this age category living in the county of Troms in Norway. The participation rate was 86. Participants were examined and interviewed by dentists in graduate training.

Eight per cent of the group reported to have had TMJ pain recently. Fourteen per cent said they had clicking or crepitation. These symptoms were twice as commonly reported by women as by men, and they were also most frequent among people complaining of rheumatism or general joint pain. By the clinical examination, clicking and/or crepitation was found in 27% of the individuals. Limitation of jaw movement was registered in only 3 persons. These «objective» symptoms were evenly common with both sexes. Dental/prosthetic status had seemingly no distinct influence of the findings.

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The last decade has witnessed a steady increase in the number of publications dealing with temporomandibular joint (TMJ) disorders. Most studies are based upon clinical material, and only a few on epidemiological surveys (10). Seemingly, patients with functional disturbances of the TMJ are increasing in number, but it is controversial whether this trend is caused by increasing incidence of disease, by rise in the seeking of treatment (5, 12) or in both.

Most patients with TMJ-disorders are women, and they are of young or middle age (6, 7, 12). Findings reported in epidemiological studies (1, 9) suggest, however, that this difference more likely is

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caused by unequal treatment patterns (11) than by differences in the prevalence of disease. A certain correlation has been observed between the degree of dysfunction on the one hand, and general health and dental conditions on the other (10). Some Swedish studies anticipate higher frequencies of TMJ symptoms among old individuals (2, 8) than among young (16, 20). It has even been maintained that there is some relationship between the occurrence of untreated muscular paindysfunction syndrome (MPD) and the later onset of degenerative joint disease in some cases (19, 23, 25).

With the above-mentioned findings and suggestions in mind, and since information of functional disturbances of the TMJ among elderly people is rare, the present study was undertaken to focus on symptoms of TMJ-disorders among subjects aged 65–79 years. It was also intended to relate findings to selected variables, and to examine the relationship between selfperceived («subjective») and clinically registered («objective») findings.

MATERIAL AND METHODS

Study area and sampling procedure

The study was performed in the county of Troms which is situated in Northern Norway (Fig. 1), and was part of a comprehensive investigation of dental and oral conditions of individuals aged 65–79 living in the county (13). The participants constituted a probability sample drawn systematically from lists containing all persons aged 65–79 in six communities representing a demographic cross-section of the county. Further details are given previously (13).

Some characteristics of the sample

The sample originally comprised 280 individuals, of whom 241 participated (participation rate 86). A broad classification of these according to age and sex is given in Fig. 1. 16 % of the group were in a bad general state of health, thus constantly dependent upon assistance or care. Totally, 80% were edentulous, 92% wore some removable denture and 63 % needed new dentures or comprehensive corrections of the old dentures, according to the described criteria (13). The poor dental status and treatment patterns, which apparently were below national standards (14, 15), should be seen in connection with the demographic characteristics of the group and their previous lack of treatment facilities (13).

Examination procedures and treatment of the data

The participants were examined and interviewed by nine dentists in graduate training. Instruction and calibration of the clinical examination and interviewing were provided by the first author (B.H.), while the second author (L.A.H.) conducted the project in the field. The participants were visited, and the examination and interview usually held in their homes, in some cases at a dental clinic. However, the procedures and equipment used were standardized, regardless of place of examination.

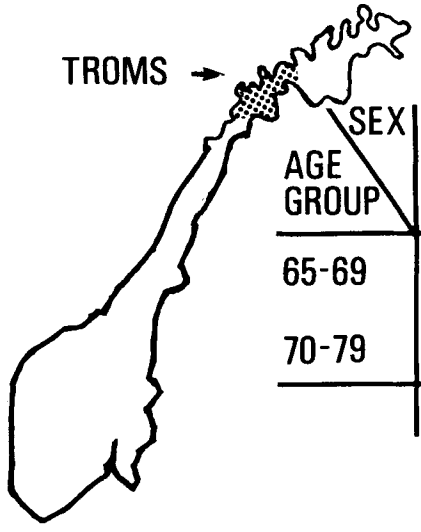
As part of a more extensive, personal interview, three structured questions were asked concerning «subjective» symptoms:

1. Symptoms of general rheumatism
2. Pain on mandibular function
3. Clicking or crepitation from TMJ on function.

The exact wording of the questions are given in the Results.

The clinical examination of the TMJ focused on «objective» symptoms by:

(a) Lateral and posterior palpation of the TMJ on movement. Possible clicking and/or crepitation was noted.



SEX / AGE GROUP	MEN	WOMEN	TOTAL NO.	TOTAL (%)
65-69	68	53	121	(50)
70-79	45	75	120	(50)
	113	128	241	(100)

Fig. 1. Study area and participants according to age and sex.

(b) Registration of reduced mobility, i.e. < 40 mm between incisal edges by full opening of the mouth.

«Subjective» and «objective» findings were related to sex, age and dental/prosthetic status in order to detect associations, and possible differences were tested by means of χ^2-tests. The relationship between «subjective» and «objective» findings was also examined.

RESULTS

Reported symptoms («subjective findings»)

In the following, the wording of the three questions are referred together with per cent distribution of the responses, totally and split up by sex.

(1) *«Have you during the last years felt any pain in your joints or had other symptoms of rheumatism («gout»)?»*

	Total %	Men %	Women %
Yes	44	39	64
No	53	58	61
Not answered	3	3	3
	100	100	100

$\chi^2 = 2.59$
df = 2

(2) *«Have you during the last years felt any pain in the mandibular joints on chewing, yawning or opening your mouth wide?»*

	Total %	Men %	Women %
Yes	8	3	12
No	90	96	86
Not answered	2	1	2
	100	100	100

$\chi^2 = 5.29$
df = 2

(3) *«Have during the last years experienced clicking, crepitation or other noises from your mandibular joints?»*

	Total %	Men %	Women %
Yes	15	9	20
No	83	89	77
Not answered	2	2	3
	100	100	100

$\chi^2 = 4.82$
df = 2

There was an overweight of positive reports from the women as compared to the men. This trend appeared in the answers to all three questions. However, by χ^2-testing of each of the distributions, they separately did not prove to be significant. Even when age differences were adjusted for, women were more likely than men to report any of the recorded TMJ symptoms (Fig. 2).

Clinically registered symptoms («objective» findings)

(a) *Registration of clicking and/or crepitation*

	Total %	Men %	Women %
Positive	27	28	26
Negative	73	72	74
Total	100	100	100

(b) *Registration of reduced mobility*

Only three persons, one man and two women, were found to have < 40 mm between incisal edges by full opening of the mouth.

Relationship between various variables

Among those reporting symptoms of general rheumatism there was a clear overrepresentation of individuals also reporting TMJ pains (15 %), clicking/crepitation (23 %); findings which were in contrast with the clinical observations that there was no associations between reported rheumatism and registered symptoms.

Dental/prosthetic status (e.g. status of the prostheses since 92 % of the participants wore dentures) had seemingly no distinct influence on the findings; only negligible variations appeared by crosstabulations (Table 1).

By running *«subjective» against «objective» findings*, a notable pattern came forth (Fig. 3). As clinically evaluated, TMJ-disorders were equally common at the age level 65–79 years. Women were, however, the most likely to report «subjective» symptoms which could not be clinically verified. In the oldest age group, it looked as if those with a clinically diagnosed TMJ-disorder were more hesitant in complaining than those in the younger age groups, and this finding appeared particularly valid for the men. Although the diagnosed disorders increased with age, the reports of symptoms decreased.

DISCUSSION

The sample should be regarded as representative for individuals aged 65–79 living in the county of Troms in 1976 (13). The non-participants comprised only 14 % of the original sample, and the composition of this group indicates that their participation could hardly have made any notable impact on the present findings.

The methods applied were rather crude. No muscle palpation was performed. Regarding mobility, only the maximal vertical mobility was registered. It might be questionned whether the limit of 40 mm is relevant applied to maximal inter-incisal mouth opening. According to recent findings, the mean value of this movement is 50.3 mm in 70-year old people. These circumstances may have caused some underregistration of «objective» symptoms, as compared to previous findings

Table 1. *Symptoms of TMJ disorders according to dental/prosthetic status. The basis for the classification of this status has been given previously (13). In short, measures for prosthetic treatment needs were derived by adding weighted scores given for non-existing or inadequate dentures, insufficiency of the base material, poor stability, occlusion or retention*

Dental/prosthetic status		Symptoms	
	Reported pain on mandibular function	Reported clicking and/or grating	Registered clicking and/or grating
Good (0–4 scores) (n = 123)	6 %	11 %	29 %
Medium (5–12 scores) (n = 89)	8 %	17 %	26 %
Poor (⩾ 13 scores) (n = 29)	10 %	13 %	14 %

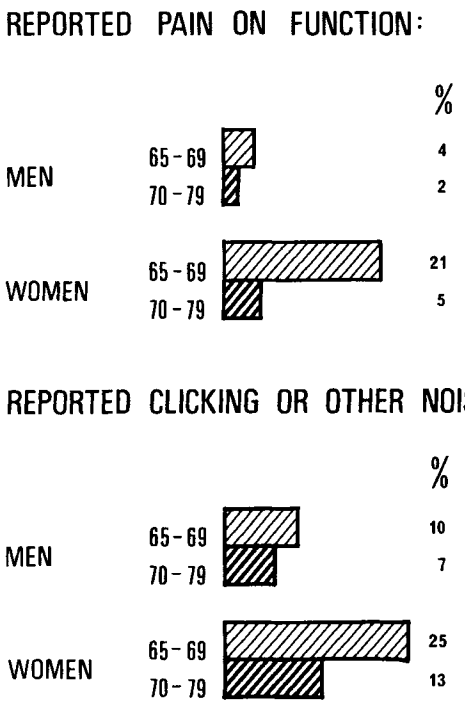


Fig. 2. Per cents of subgroups reporting pain or clicking/other noise from the TMJ.

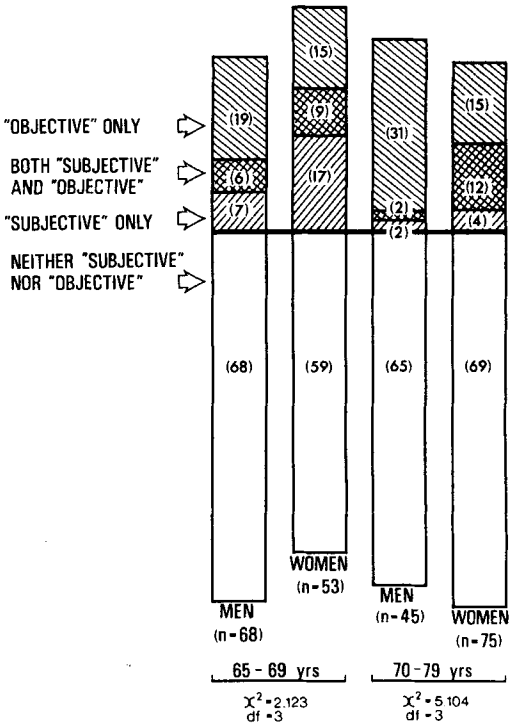


Fig. 3. Per cents of subgroups according to clinically registered («objective») and self-reported («subjective») symptoms of TMJ-disorder.

obtained by several clinical measurements combined into findings and/or indices (2, 9). However, the simple methods conceivably provided reliable data in the sense of low inter-examiner variations (4, 24). The use of personal interviews, which should be considered the most useful among elderly people compared with self-administered questionnaires (22), presumably added validity to the data on the occurrence of any of the recorded TMJ-disorder, whether selfperceived («subjective»), or clinically registered («objective»).

The frequencies of symptoms reported from

surveys of Scandinavian populations vary substantially (1, 8, 9, 21). Several explanations may be suggested for these differences, the most likely being dissimilarities in the collection of data or use of criteria, possibly also age and demographic inequalities of the populations investigated.

Degenerative TMJ disease is often a result of a combination of etiologic factors. It is associated with ageing and general, advancing osteoporosis, which affects the cortical bone and sequently the articular cartilage. Several different joints may show changes and symptoms simultaneously. Women more frequently than men are found to be affected with degenerative TMJ disease (18) and it appears to be most common among individuals over 40 years of age (3). The symptoms, primarily pain, crepitation, and discomfort, are usually found to last for about nine months, followed by a gradual disappearance of the condition (25). It has been postulated that there is a weak correlation between «objective» findings of degenerative TMJ disease and the «subjective» symptoms (18).

The procedure by the clinical examination used in the present study, revealed possible chronic osteoarthritis, – in principle not MPD. It might be objected that diagnoses are uncertain without radiographic verification. However, possible detection of changes in a joint is of little value unless it is significant to the patient, and this is a clinical matter (26). The interview could reveal «subjective» symptoms. Even though the amount of «objective» findings, as measured by the described technique was equal in both sexes, the women were the most likely to report symptoms.

It seems reasonable to suggest that the reported «subjective» symptoms primarily stemmed from muscular tension, while the «objective» findings derived from degenerative joint disease, whose symptoms as a rule had disappeared, especially in the oldest age group. Possibly, degenerative TMJ-disorder is part of a general pattern of skeletal disease. No indication was presently found for presuming that «occlusal dysharmony» (23) or early loss of molars (17) had lead to joint changes or to «subjective» symptoms, since the bulk of participants for years had suffered from miserable dental and prosthetic conditions (13).

Summing up: Approximately every fourth of the group studied was found to have some clinical sign of TMJ-disorder («objective» symptoms) according to the criteria used. The frequency tended to increase with age, but it was equally distributed between the sexes. In contrast, women were more likely than men to report either pain or other symptoms («subjective» symptoms). It might be speculated that this deviant pattern is part of a profound sex – and sick role-behavior, or is due to unequal levels of tension of masticatory muscles. TMJ-disorders seemingly constituted a minor problem to most participants as compared to their general and dental health problems.

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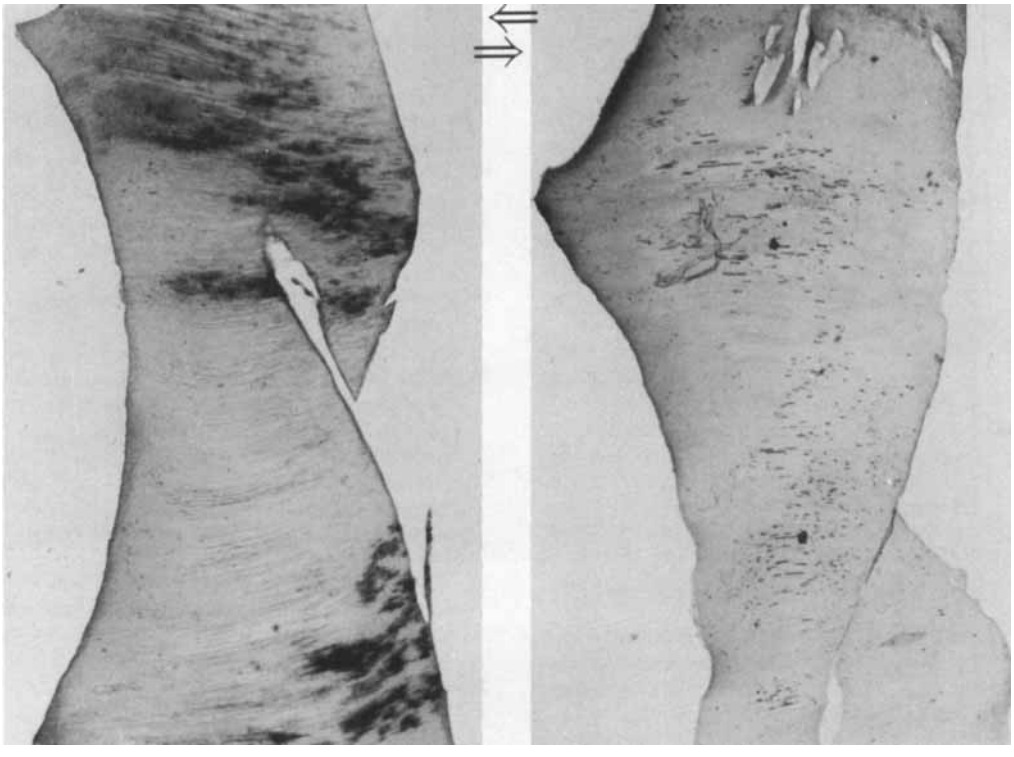

Fig. 2. A section obtained from the same fragment of carious dentin as in Fig. 1, representing those sections which were treated with the $Ca(OH)_2$ solution for 1 min before incubation. Note the lack of any noticable staining reaction. Incubation as in Fig. 1. x 27.

Fig. 3. A section obtained from the same fragment of carious dentin as the section seen in Fig. 1, representing the aminopeptidase activity after treatment for 1 min with Tubulicid®. Incubation as in Fig. 1. x 27.

ERRATUM

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Due to a technical mishap during the printing procedure the photographs of Figs. 2 and 3 in the article entitled «Effect of a $Ca(OH)_2$ solution and a chlorhexidine based detergent on the microbial activity of human carious teeth» had changed place.