

Seafaring: A risk for seamen's oral health?

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Information about the oral status and dental health behavior and the working history of 369 Finnish seamen on different types of ships was gathered by means of a questionnaire. A control group of workers on shore was formed for sailors 35-44 years of age. Removable dentures were worn by 16% of the seamen. Oral disorders during the week before the study were reported by one-third. During the previous 2 years 14% of the sailors had had at least one episode of oral troubles, 15% twice and 9% three or even more times. One-third of seamen with oral trouble had needed pain-killing tablets or antibiotics. Sick leave days had been needed by 3% of respondents during the previous 2 years because of oral disorder (mean length of sick leave period was 1.4 days). The control group reported gum bleeding more often than the seafarers. Even though there were no signs of a poorer dental condition in sailors than in the controls on shore, the possibility that the seafaring could constitute a risk for the oral health of seamen in other age groups cannot be excluded. □ *Occupational health; oral health; questionnaires*

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In the USA, dental problems among seafarers caused 35% of all treatments of the digestive system, and one-fourth of the needed dental treatment was given aboard ship (1). Dental diseases account for almost one-fifth of the total morbidity rate, ranging from 29% among Bulgarians to 19% among Filipinos, among seamen in a fleet with multinational crews (2). Oral diseases thus constitute a great health problem for seamen all over the world (3). In our earlier study (4) one-third of the seamen stated that an acute dental condition had been the reason for their last dental visit.

The seamen's work, with its long time at sea out of the reach of services on shore, and their life style aboard ship with, for example, frequent snacks during the day in the messroom and the male working society, apparently put their oral health at risk. Thus, it could easily be seen that seafaring as an occupation may form a risk for the dental status of seamen. In the present study information about dental status, oral problems, and dental health behavior was sought by means of a questionnaire sent to Finnish seamen.

Materials and methods

Late in 1990 the oral status and dental health behavior, the education, and the work history at sea for Finnish seamen were asked about in a questionnaire containing 32 questions. The data collection procedure and characteristics of the respondents and control group have been reported earlier (4).

The following aspects were surveyed in a pretested questionnaire: self-assessed dental status, wearing of

full or partial removable dentures, chewing capacity, frequency of oral disorders and diseases, and frequency of brushing teeth.

The data were analyzed by cross-tabulation. The statistical significance of differences between background variables was tested using the chi-squared test. Values of $p < 0.05$ were accepted as statistically significant.

Results

Removable dentures and chewing capacity

The wearing of full or partial removable dentures was reported by 16% of the seamen (Table 1).

Forty-four per cent of the respondents considered their teeth to be in good, 48% in fair, and 7% in bad condition. Five per cent of those who had natural teeth only and 20% of those with removable dentures saw their dental status as poor ($p < 0.001$). The women more often assessed their teeth as good than did the men (58% and 39%, respectively; $p < 0.003$). There was no statistically significant correlation between rank or age in this respect.

Nearly 6% of those with only natural teeth and one-fourth of those with removable dentures reported having problems in chewing ($p < 0.001$). The younger the sailors were, the better chewing capacity they reported ($p < 0.04$). There was no statistically significant correlation between rank or sex in this respect. Moreover, those who had visited a dentist during the previous 2 years reported better chewing capacity than those who had visited a dentist more seldom ($p < 0.003$).

Table 1. Self-assessed frequency of removable dentures and biting capacity of the Finnish seamen surveyed (%) ($n = 365$)

	Respondents	Removable dentures	Biting capacity adequate
Sex			
Men	74	16	91
Women	26	18	92
Rank			
Officers	38	20	89
Crew	62	14	92
Type of vessel			
Tanker	12	18	91
Cargo ship	13	21	87
Container	18	14	91
Ferry	29	13	93
Icebreaker	29	19	89
Work period			
5–15 days	44	13	93
16–30 days	32	18	89
31–240 days	25	21	89

Table 2. Frequency of brushing teeth as reported by the 358 Finnish seamen surveyed, with regard to sex, rank, type of vessel, and work period (%)

	Respondents	More than once a day	Once a day	Less often
Sex				
Men	73	48	43	9
Women	27	85***	14	1
Rank				
Officers	39	55	41	4
Crew	61	59	32	8
Type of vessel				
Tanker	12	47	39	14
Cargo ship	13	51	36	13
Container	18	49	42	9
Ferry	30	82***	16	2
Icebreaker	29	45	50	5
Work period				
5–15 days	46	72***	25	3
16–30 days	32	43	50	7
31–240 days	25	50	37	13

*** $p < 0.001$.

Oral disorders and diseases

Oral disorders during the week preceding the survey were reported by 111 of the respondents, with an average of 1.4 episodes. Bad smell or taste (41%), shooting pains (40%), bleeding gums (30%), and tender teeth when biting (21%) were the most frequent complaints. Dental pain or other oral disorder during the previous 2 years was reported by 39% of the sailors, 37% of whom had had one, 39% two, and 23% three or more episodes of this kind. In one-third of these cases there had been a need for pain-killing tablets or antibiotic treatment.

One-third of the respondents reported that oral troubles had affected their work capacity, and 1% reported marked suffering from oral disorders. Five per cent of the respondents reported that the oral troubles of their work mates had affected their own work or work load, but only 2% saw their own oral disease as having effects on their colleagues' work aboard ship.

Three per cent of respondents had been on sick leave because of oral disorder during the previous 2 years (mean length of sick leave periods was 1.4 days; SD, 0.7 days). A reason other than oral disorder had caused need for sick leave among almost half of the respondents during the previous 2 years (mean length, 23.0 days; SD, 24.1), men less frequently than women (44% and 58%, respectively; $p < 0.02$) and officers less frequently than crew (34% and 56%, respectively; $p < 0.001$). There was no significant correlation between age groups in this respect.

Dental behavior

At least daily toothbrushing was reported by 93% of the respondents, women being more active than men

($p < 0.001$) (Table 2). The reported daily use of toothpaste was as common as toothbrushing (93%).

Bad smell or taste was reported more frequently among those who brushed their teeth less than once a day ($p < 0.01$), but no differences in toothbrushing frequency were found with regard to the rate of the other oral troubles.

Seafaring and oral health

Eleven per cent of the respondents considered that the seamen's profession had impaired their oral health, the officers more often than the crew ($p < 0.005$). Men, persons of 45 years or more, and those with more than 15 sailing years or with removable dentures felt more often than women, younger persons, or those who had sailed for a shorter period that seafaring as an occupation had negatively affected their oral health ($p < 0.001$). When they were questioned separately, long waiting periods for a dental appointment, short times in port, and the company policy to pay for only tooth extractions were most frequently mentioned as reasons for poor dental situation.

When subjective conceptions of oral health among 35- to 44-year-old sailors were compared with that of the control group on shore, bleeding from gingiva was mentioned by 20% of those working on shore and only by 9% at sea ($p < 0.006$). The other oral symptoms asked about—pain when opening the mouth, tender teeth when chewing, shooting pain, bad smell or taste, or toothache—were reported equally frequently by the two groups. There were no differences in use of or need for pain-killing drugs or antibiotic treatment for dental diseases between sailors and shore workers.

Discussion

Of all the Finnish seamen questioned, 16% had removable dentures. The respective figure among the Finnish working age population is 28% (5). Officers more often had removable dentures than crew members, perhaps reflecting the difference in social status between these groups.

The number of missing, rehabilitated teeth was not asked about. It is thus not possible to estimate the number of teeth or the rate of rehabilitation with dentures. However, there is good reason to doubt the existence of a high rate of rehabilitation on the basis of earlier studies. For example, among 300 German sailors studied, 2229 teeth had been extracted, but only 623 of these had been replaced by removable dentures or bridges (6). The high rate of rehabilitation can be further doubted from the smaller number of seamen (44%) assessing their teeth as being in good condition as compared with 67% of the Finnish population (7).

The frequency of daily toothbrushing among Finnish male and female seamen was about the same as that found in a Finnish national survey (8). However, according to Schaetzing et al. (9), only 4.4% of German male seamen had a healthy periodontium. They also found that periodontal diseases were frequently taken quite fatalistically—for example, as a sign of scurvy—and thus accepted as a maritime disease. Oral health may also be a more general indicator of personal hygiene and health care practices (10). Perhaps the observed difference between seamen and their control shore workers in reported bleeding of the gums reflects this same attitude; the seamen failed to report the real situation.

Sitting around eating in messrooms is a popular way to spend free time aboard ship. This means many eating breaks and snacks per day and may lead to a high calorie intake and overweight, causing many acidic oral periods and increased caries tendency (11, 12). Partial replacement of daily sucrose by xylitol, a five-carbon sugar alcohol, can cause a marked reduction in the incidence of caries (13–16). Xylitol in chewing gum has also beneficial effects on oral health (17). Xylitol-containing chewing gum or sweets taken after every meal and snack and being freely available in messrooms would be a good and acceptable method for helping to prevent caries aboard ships. Chewing gum containing vitamins and minerals has earlier been reported to have suitable effects aboard ship (18).

The health and social consequences of oral health problems should not be underestimated. Even though the number and length of sick leaves because of dental problems were small, one must not forget the role of dental status and functions in the etiology of other diseases. Dental infections may be a risk factor for the most frequent and deadly vascular diseases (10, 19).

There were only slight differences between seamen and shore workers 35–44 years of age in this study. This

reflects the increased level of awareness of dental health and the generally improved dental health among younger Finnish people (9, 20). The older seamen had more dental disorders than the younger ones, which could reflect the undesirable effects of seafaring on dental health. The role of dental health centers for seamen in providing services has earlier been shown to be of great importance (4). One must remember, however, that the work-leave period system on board ships today is one-to-one. During their free time on shore the seamen have good opportunities to visit a dentist, even better than those with regular working hours on shore.

In this study no clear answer could be given as to whether the seafaring, despite its apparent risk features, could threaten sailors' oral health. A clinical trial to objectively study the oral status of seamen is needed because the different attitude to dental health aboard ship compared with that on shore is suspected of having a strong influence on answers.

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