Incidence of treated alcoholism in north-east Scotland, Orkney, and Shetland fishermen, 1966-70

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ABSTRACT The psychiatric case register for the north-east of Scotland has been used to calculate the rates for first contact with a diagnosis of alcoholism by fishermen and non-fishermen in the years 1966-70. In each of these years the fishermen had higher rates than non-fishermen as a whole and also higher rates than the non-fishermen from social class IV, which is the social class to which most fishermen belong. The smaller differences between the rates of fishermen and non-fishermen in 1969 and 1970 relative to 1966, 1967, and 1968 may reflect a preferential "shedding" of older alcoholic fishermen at a time when there was a greater than usual contraction in the size of the work force. Differences between the rates for fishermen and non-fishermen were also evident in the age groups 20-29, 30-39, 40-49, and 50-59, being most pronounced in the 20-29 group. The findings are consistent with fishing being an occupation with a high risk for alcoholism.

Ever since Noah got drunk with wine and exposed himself in his tent (Genesis ix, 41) seafarers have had a reputation for their heavy drinking. This century an alcoholic seaman has described how "life aboard ship builds up inner tensions. . . . Consequently, once he reaches port the seaman turns to alcohol and uses it as a first thought safety valve. Ashore, part of the heritage of the sea are the visits to the houses of prostitution and the saloons or places where drink flows freely."¹ A fisherman has said: "Of course fishermen get drunk. Anybody who does what we do has to get drunk to stay sane."²

While several studies have investigated the drinking habits of seamen³ there have been no studies specifically concerned with drinking or alcoholism in fishermen, although a number do provide relevant information.

So far as we know the only untoward consequence of Noah's drinking was the embarrassment caused to his sons when they entered the tent. The drinking habits of fishermen this century have given rather more cause for concern. It has been claimed that alcohol contributes to offences of indiscipline in fishermen.⁴ A committee of inquiry into trawler safety received "a considerable amount of evidence that drink amongst crews is a major factor affecting safety,"⁵ and it has been suggested that the increased injury rate in trawlermen in the first 24 hours aboard

side-winding trawlers is related to drinking (W T Richardson, personal communication). Official inquiries into accidents at sea also provide an indication of the role of alcohol in fishing vessel accidents.³ The importance of establishing more clearly the relationship between drinking and safety at sea lies in the fact that the risk of fatal accidents in fishermen is 17 times that of all men in England and Wales and nearly seven times that of all men in Scotland.⁶

Fishermen are about six times as likely as other men to die from cirrhosis of the liver⁷ and they are also more prone to peptic ulceration.⁸ Gastro-intestinal complications of alcoholism, such as these, and psychiatric complications can result in fishing vessels having to put into port to put a sick fisherman ashore for treatment. The possible role of alcohol in several series of such "medical disembarkations" has been discussed elsewhere.³ The largest known contribution of alcohol-related psychiatric illness to medical disembarkations (25%) was found in a series of disembarkations of fishing vessels at Faroese hospitals (A Mair, personal communication).

Evidence directly concerning the incidence or prevalence of alcoholism in fishermen is not substantial. Of almost 3000 male alcoholics first admitted to Icelandic institutions between 1951 and 1970, 22% were fishermen or merchant seamen whereas only about 11% of men in the economically active population were in these occupations.⁹ In one year only four illnesses associated with alcoholism were

found in the Official Trawler Log-books and medical records of 3365 men registered with the Grimsby Fishing Vessel Owners' Association.¹⁰ The Department of Trade Working Group on Discipline in the Fishing Industry was told that "not more than perhaps about 15% of fishermen were immoderate drinkers," but the source of this information was not given.⁴ Blaxter¹¹ has shown that in the Shetland Islands fishermen and seamen have a prevalence rate for alcoholism of almost 13%, and in her eight occupational groups this rate is exceeded only by "workers in public houses, etc" (18%). Since the study was carried out in 1978 using population statistics from the 1971 census, Blaxter (personal communication) has suggested that her figures must be regarded as tentative since oil-related development may have altered occupational structure in the intervening years. Furthermore, since the fishing industry declined in size during this period, the rate for fishermen is likely to be an underestimate.

The purpose of this study has been specifically to examine rates of treatment for alcoholism in fishermen in north-east Scotland between 1966 and 1970.

Methods

DEFINITION OF POPULATIONS AT RISK

The opportunity for the study was afforded by the existence in Aberdeen of a computer-based psychiatric case register that contains data relating to all contacts with the psychiatric services (not just admissions). The area covered by the case register is 4400 square miles (11 352 sq km) of north-east Scotland and the islands of Orkney and Shetland. The mainland area, in the period for which statistics were obtained, comprised the city of Aberdeen, the counties of Aberdeen, Banff, and Moray, and the northern part of the county of Kincardine (excluding St Cyrus DC, Laurencekirk DC, Laurencekirk SB, and Inverbervie SB).

In 1966 the catchment area had a male population of roughly 153 000 aged between 15 and 69 (1966 census), which had fallen to roughly 150 000 by 1971 (1971 census). There is no official estimate of the size of this population for 1967, but official estimates are available for 1968, 1969, and 1970 (General Register Office for Scotland, personal communication), and an unofficial estimate for 1967 may be made by taking the mean of the 1966 census figure and the 1968 official estimate. While the 1966 census breaks down country populations into separate figures for each small burgh and district of county enabling a precise calculation of the population of the county of Kincardine which falls within the catchment area to be made, the official local authority estimates are not broken down beyond county level. To make

unofficial estimates of the population of the northern part of Kincardineshire for the years 1968, 1969, and 1970 it has been assumed that the population constituted the same proportion of the total population of the county as in 1966 (64%).

By subtracting the number of fishermen for each year, these figures can be used to determine the population of male non-fishermen aged 15 to 69 at risk of receiving a psychiatric diagnosis of alcoholism in the psychiatric services in the years 1966-70.

The population of fishermen at risk in the catchment area in 1966 can be determined from the 1966 census. For the years 1967-70 estimates have to be made of the population of fishermen at risk. While the annual *Scottish Sea Fisheries Statistical Tables*¹² list for each fishing creek the numbers of fishermen employed on boats registered in these creeks, they are less valid than the census in representing the number of fishermen at risk in a particular area. The reason for this is that boats may sail and hire their crews from ports other than those in which they are registered. The year-to-year changes in the numbers of fishermen recorded in the *Scottish Sea Fisheries Statistical Tables*, however, are likely to reflect year-to-year changes in the population of fishermen resident in the catchment area with more validity than estimates based on the 1966 and 1971 censuses, which assume that there was a uniform decline in the size of the population at risk during the period 1966-70. Therefore, the method used has been to base the estimations for 1967-70 on the census data from 1966 and 1971 using the figures in the *Scottish Sea Fisheries Statistical Tables* as a guide to year-to-year changes. In practice, as table 1 shows, it is most appropriate to assume that the population as reflected in the 1966 census did not change in size until 1969, at which time it declined to the size reflected by the 1971 census.

IDENTIFICATION OF NEW CASES OF ALCOHOLISM

The number of men aged under 70 who received a first diagnosis of alcoholism in the years 1966-70

Table 1 *Estimates of numbers of fishermen in north-east Scotland, Orkney, and Shetland, in each of the years 1967-70, and data on which estimates are based*

Year	No of fishermen recorded in census	Estimate of no of fishermen	No of fishermen employed on boats registered in area*
1966	5682		6239
1967		5682	6235
1968		5682	6203
1969		5075	5867
1970		5075	5869
1971	5075		5906

**Scottish Sea Fisheries Statistical Tables*.¹²

was extracted from the psychiatric case register. The diagnoses were based on the seventh and eighth revisions of the *International Classification of Diseases*.^{13 14} ICD-7 code numbers 307 and 322 were used for 1966, 1967, and 1968 and ICD-8 code numbers 291 and 303 for 1969 and 1970.

The cases were divided into two groups: fishermen and non-fishermen, the latter being also divided into social class IV and non-social class IV subgroups. Fishermen and non-fishermen were also subdivided according to age for the calculation of age-specific rates.

The case records of all the fishermen were examined to exclude cases of fishermen who had received a diagnosis of alcoholism before the register began and to exclude cases of fishermen who had received a hospital diagnosis of alcoholism at a hospital outside north-east Scotland. This procedure was not followed for the non-fishermen.

For the purposes of the study, crofter-fishermen, found only in Orkney and Shetland, were classified as non-fishermen.

CALCULATION OF TREATED INCIDENCE RATES FOR ALCOHOLISM

The numbers of new cases of alcoholism were divided by the populations at risk for each year in order to calculate overall annual incidence rates per 100 000 for treated alcoholism in the fishermen, the non-fishermen, and social class IV non-fishermen.

To take into account possible differences in the age distributions of fishermen and non-fishermen, age-specific incidence rates were calculated. No figures are available concerning the age distribution of men registered in the years 1966-70, but the age distribution of men registered in 1963 with the Grimsby

Fig 1 Annual incidence rates for treated alcoholism in fishermen, male non-fishermen, and social class IV male non-fishermen in north-east Scotland, Orkney, and Shetland, 1966-70.

Table 2 Mean annual incidence rates for treated alcoholism in fishermen and non-fishermen in north-east Scotland, Orkney, and Shetland, 1966-70

	Rate per 100 000
Fishermen	279
Social class IV men (including fishermen)	115
Male non-fishermen	102
Social class IV male non-fishermen	84

Fishing Vessel Owners Association has been reported,¹⁰ and the fisheries statistics unit of the Department of Agriculture and Fisheries for Scotland (personal communication 1979) has advised that it knows of no information that would challenge the assumption that the age distribution of north-east Scotland fishermen between 1966 and 1970 was different to that of Grimsby trawlermen in 1963, except for the fact that rather more older than younger men may have left the industry after 1967 (personal communication 1976). The Grimsby age distribution was used to subdivide the population of fishermen each year into four age groups: 20-29, 30-39, 40-49, and 50-59. Fishermen aged under 20 or 60 and over were excluded from the calculation of age-specific rates.

Fig 2 Mean annual incidence rates for treated alcoholism by age in fishermen and male non-fishermen aged 20-59 in north-east Scotland, Orkney, and Shetland, 1966-70.

Results

OVERALL INCIDENCE RATES FOR ALCOHOLISM IN FISHERMEN AND NON-FISHERMEN

Figure 1 shows the rates per 100 000 for a first diagnosis of alcoholism in fishermen, non-fishermen, and social class IV non-fishermen aged 15 to 69 in the years 1966-70. In each of these years the fisher-

men had rates higher than those of the non-fishermen. Table 2 shows that on average the rates for fishermen were more than two and a half times the rates of the non-fishermen in general and more than three times the rate of other men in the social class IV to which most fishermen belong.

AGE-SPECIFIC INCIDENCE RATES FOR ALCOHOLISM IN FISHERMEN AND NON-FISHERMEN

Figure 2 combined the data from all the years and shows the incidence rates per 100 000 for alcoholism in fishermen and non-fishermen in four age groups. The largest difference in rates is found in the age group 20-29, where the difference is more than four-fold.

Discussion

CRITICISMS OF THE BASE POPULATION DATA

The population of the catchment area was not determined accurately even in 1966, but the "10%" sample census is quite adequate for the purposes of this study. Similarly the official local authority estimates for 1968, 1969, and 1970 are unlikely to introduce inaccuracies sufficiently large to affect the accuracy of the calculations made in this study. The same applies to the figures for 1967, which are an unofficial estimate. Again, in relation to the total population of the catchment area, the inaccuracies that are introduced by having to estimate the size of the population of the northern part of Kincardineshire for the years 1967-70 are likely to be small.

The figures used in determining the population of fishermen at risk of alcoholism each year also present problems. The most reliable year is 1966 for which the figures have been taken from the sample census. 1970 is the next most reliable year since the figures are based on the 1971 census. While the intervening years are less reliable, the gradual decline in the work force throughout the Scottish fishing industry during this period makes it unlikely that there has been any serious underestimate or overestimate of the population of fishermen in the years 1967-9.

CRITICISM OF THE METHOD OF CASE IDENTIFICATION

When Baldwin¹⁵ presented his findings on the incidence of psychiatric disorder based on the north-east Scotland psychiatric case register he emphasised that, "with the possible exception of acute psychotic breakdown, psychiatric referral rates are not true inception rates and reflect at least as much the referral practices of general practitioners as they do community morbidity levels." This is a

particularly appropriate consideration in relation to incidence rates for alcoholism since several studies¹⁶ have shown that alcoholics who come to the attention of care-giving agencies, such as psychiatric services, are only a proportion of the alcoholics in the community. Thus, both for fishermen and non-fishermen, the incidence rates reported here are, at the most, only a crude reflection of the "true" or "real" incidence or inception of alcoholism in the community. It is for this reason that this study has qualified the word "incidence" with "treated," although this is not as accurate as the more cumbersome qualification "psychiatrically diagnosed."

POSSIBLE EXPLANATIONS FOR THE APPARENT DIFFERENCE IN THE INCIDENCE RATES OF FISHERMEN AND NON-FISHERMEN

The difference between the incidence rates for alcoholism in the fishermen and the non-fishermen could be due to an underestimate of the incidence in non-fishermen, an overestimate of the incidence in fishermen, both of these incorrect estimations at the same time, a reduced likelihood of non-fishermen relative to fishermen being referred for psychiatric treatment, or a real difference in the incidence or inception rates in the two groups.

An underestimate of the incidence rates in non-fishermen could be due to an overestimate of the size of the population of non-fishermen at risk. It would, however, need to be a gross inaccuracy to account for the differences obtained, it would not explain the differences found for 1966 for which the base population data are the most robust, and if it did apply to the years 1967-70 it would imply a doubling at least of the catchment area population between 1966 and 1967, which is clearly impossible.

An underestimate of the incidence rates in non-fishermen could also be caused by relatively more non-fishermen than fishermen having treatment for alcoholism outside the catchment area. This possibility cannot confidently be excluded, although there is nothing to suggest that it does happen and, if anything, it seems unlikely in that it is the fisherman's work that takes him away from the catchment area.

The rates for fishermen could be overestimated if the base population of fishermen was underestimated. While comparison of the figures from the 1966 and 1971 censuses with those contained in the *Scottish Sea Fisheries Statistical Tables* (table 1) might suggest that the use of census data does underestimate the size of the population of fishermen, the difference probably reflects the fact that boats registered at ports in the catchment area may, for example, sail from west coast fishing ports and be crewed by west coast fishermen. Even if the rates are based on the numbers of fishermen recorded annually

in the *Scottish Sea Fisheries Statistical Tables*, they are still substantially higher in fishermen than non-fishermen both by year and by age group (K J B Rix *et al*, paper presented at 3rd Scottish Alcohol Research Symposium, Loch Achray, Scotland, 1977).

Since the life styles of fishermen and non-fishermen are so different the differences in rates may represent an increased likelihood of fishermen being referred for psychiatric treatment for alcoholism. In practice it is difficult to envisage many circumstances in which this might happen. If an alcoholic fisherman develops a withdrawal psychosis at sea he will almost certainly have to be admitted to hospital, but the likelihood of a non-fisherman with alcoholic psychosis being admitted to hospital could hardly be much less. If the wife of an alcoholic fisherman suffers with her "nerves" she may consult her general practitioner and set in motion a chain of events that leads to her husband's referral to the psychiatric services, but, except for the fact that her husband is away from home more often, she is probably no more likely to do this than the wife of the alcoholic non-fisherman. Since some middle-water and distant-water deep sea fishermen may be paid infrequently compared with shore-based workers, the periods of financial hardship imposed on their families if they spend all their money on alcohol may be longer than the periods of hardship imposed by shore-based alcoholics. The majority of fishermen in north-east Scotland during the study period did not go on such long trips and were, therefore, paid as often as shore-based workers. Finally, there is the possibility that general practitioners recognise alcoholism more easily in fishermen, perhaps because the occupation is believed to be a heavy drinking one, or have a lower threshold for referral to the psychiatric services in relation to fishermen. This possibility cannot be discounted but if applicable it would suggest that the calculated incidence rates for the fishermen are less crude than those for non-fishermen and therefore a closer reflection of the true incidence or inception rates in the community.

There is no obvious evidence to suggest that any of these possibilities is sufficient to explain the differences in the calculated incidence rates for alcoholism in fishermen and non-fishermen. Furthermore, one fact makes it likely that the difference may have been underestimated by the methods used. Care was taken to exclude the cases of fishermen who received their first diagnosis of alcoholism either outside the catchment area or before the case register was established. This procedure was not followed in relation to cases of alcoholism in non-fishermen. Thus the incidence rates for the non-fishermen have probably been overestimated.

POSSIBLE SIGNIFICANCE OF A REAL DIFFERENCE IN INCEPTION RATES FOR ALCOHOLISM IN FISHERMEN AND NON-FISHERMEN

If, each year, more fishermen than non-fishermen develop alcoholism this difference requires some explanation.

One possible explanation for higher inception rates in fishermen than non-fishermen could be that this reflects a higher incidence rate in the social class to which fishermen belong. Most fishermen, however, belong to social class IV, and the rate for social class IV non-fishermen was below the rate for non-fishermen in general. The fact that when fishermen were included with the social class IV men the rate was higher than that for non-fishermen in general suggests that the presence of a single high-risk occupation, as it has been called,¹⁷ can account for important differences in the social class rates for treated or diagnosed alcoholism.

If the findings of this study do represent a higher inception rate for alcoholism in fishermen than other social class IV men several factors may explain this. Indeed, the fishing industry seems to have all of the factors which it has been suggested may lead to a high rate of alcoholism. In relation to a job milieu that promotes heavy drinking there is evidence that alcohol is available on board ship even when a "bonded" supply is not permitted;⁴ there is social pressure to drink alcohol on board;² there is collusion by colleagues and permissive attitudes on the part of employers that are disclosed in Department of Trade inquiries;³ there is boredom and separation from normal social and sexual relationships;¹⁸ there are "strains and stresses" in the occupation;^{2,18} that may be relieved by alcohol;⁴ and, until "decasualisation" was introduced in 1979, the fisherman's job was an insecure one. In the context of declining catches and declining numbers of fishermen employed everywhere except Lowestoft but especially in Aberdeen¹⁹ the job remains an insecure one in a different sense.

There have been several suggestions that fishermen constitute an unusual group of men,^{5,20} and anecdotal evidence links the fishermen's unusual characteristics with their capacity for drinking: "a race apart, perhaps the last of the wild men in this tamed Island of ours; fellows capable of working day and night without food or sleep . . . and then capable of going on the booze with equal energy and enthusiasm" (J B Priestley quoting a trawler owner in his *English Journey*). If the industry attracts such unusual men it may attract men with an increased risk of alcoholism as does seafaring in general.¹⁷ Furthermore, the presence of such men in the industry, and their drinking habits, may deter moderate drinkers

from entering the industry and put pressure on moderate drinkers to leave.²¹

YEAR-TO-YEAR CHANGES IN THE INCIDENCE RATES FOR TREATED ALCOHOLISM IN FISHERMEN

Figure 1 shows that the rates for fishermen in 1969 and 1970 were much lower than in the years 1966 to 1968, while the rates for the rest of the population and for social class IV non-fishermen remained fairly constant. This could be a chance fluctuation or diagnostic practices could have changed consequent on the introduction of the eighth revision of the *International Classification of Diseases*. It is difficult to think of any change that could have resulted in fishermen, but not non-fishermen, being given non-alcoholic diagnoses in preference to alcoholic diagnoses on the basis of the new classification.

The figures from the *Scottish Sea Fisheries Statistical Tables* (table 1) suggest that from 1968 to 1969 the numbers of fishermen employed fell more than usual, and the fishery economic and statistics unit of the Department of Agriculture and Fisheries for Scotland (personal communication 1976) has pointed out that those men leaving the industry at this time would generally be older fishermen. The fact that there were no new cases of alcoholism registered for fishermen aged 50 or over in 1969 and 1970, unlike the previous years and unlike the younger age groups, suggests that the fall in the rates in 1969 and 1970 may have been caused by older fishermen, about to come to the attention of the psychiatric services for treatment of alcoholism, leaving the industry before doing so. That men with alcohol problems may find it difficult to obtain work as fishermen when jobs are scarce is suggested by an editorial in the *Trawling Times* of 1975: "If the boozers want it spelled out for them, may we pass on the comment that has been made to us several times recently from all sides of the industry. Namely, that if we are faced with any contraction of the industry in this coming year then we all know where to look for our 'reducible minority'."²² Such a preferential "shedding" of alcoholics is also consistent with the suggestion made recently by fishermen's leaders that the industry's alcohol problem has declined with the contraction of the industry.²³

IMPLICATIONS FOR THE FISHING INDUSTRY

The human and economic cost to the fishing industry of alcohol abuse and alcoholism should prompt fishing vessel owners, the trade unions, and the insurers of fishing vessels to formulate a programme for tackling this problem. Failing this, the Secretary of State at the Department of Trade should consider using his statutory powers "for securing the safety of

ships and persons on ships" and "for protecting the health of persons on ships" (Merchant Shipping Act, 1979) to promote action on this problem. With the industry in a state of decline, and its alcohol problem perhaps but not necessarily smaller than usual, this should be an ideal time to tackle the problem so that if the industry flourishes again it may do so relatively free of alcohol problems.

We are grateful to Professor W M Millar and Professor G Ashcroft for allowing us to use the North-east Scotland Psychiatric Case Register. Staff at the Department of Agriculture and Fisheries for Scotland and the General Register Office for Scotland supplied statistics and other information. Dr N Kreitman has kindly criticised successive drafts of this paper.

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