

# **OCCUPATIONAL HEALTH NEEDS OF COMMERCIAL FISHERMEN IN SOUTH-WEST ENGLAND**

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## **Abstract**

### *Background*

Work in commercial fishing is physically demanding and hazardous, but unlike merchant seamen, fishermen are not required to hold a certificate of medical fitness.

### *Aims*

To investigate the case for regulatory medical standards for commercial fishermen, and to identify priorities for the prevention and management of occupational injuries at sea.

### *Methods*

We surveyed a convenience sample of fishermen at three major fishing ports in South-west England, using a standardised, interview-administered questionnaire.

### *Results*

Interviews were completed by 210 (68%) of 307 fishermen approached. Over their careers, 56 subjects (27%) had been returned to shore as an emergency for medical reasons, a rate of 14.6 (95% CI 11.5-18.2) per 1000 man-years. Most emergency evacuations were for acute injuries, and only five were for illness. A few participants suffered from chronic disease that would call into question their fitness to go to sea. Fifty five fishermen had suffered injuries in the past 12 months, including 12 that had caused loss of more than three days from work. Subjects had self-stitched four of 15 reported hand lacerations, while others had been bound with "Gaffer" tape.

### *Conclusion*

Prevention of hand lacerations should be a high priority, with first aid training and equipment for fishing crews to improve their care when prevention fails. No firm conclusions can be drawn about the value of regular medical screening for commercial fishermen, but such screening should be considered a lower priority than accident prevention.

### *Key words*

Fishermen, evacuation, health screening, injury, laceration.

**Key points**

- Routine medical screening of commercial fishermen is a lower priority than the prevention of injuries while at sea.
- There is a need for improved prevention and better acute management of hand lacerations in commercial fishermen.
- Commercial fishermen would benefit from better access to dental services at short notice, perhaps through special arrangements at major fishing ports.

## **Introduction**

Work in commercial fishing is physically demanding and hazardous. The industry has long been associated with high rates of occupational injury<sup>1-8</sup>, management of which is complicated by difficult and delayed access to medical services, especially when accidents occur in adverse weather and at a distance from on-shore facilities. Remoteness from care can also be a problem when other medical emergencies occur at sea, and partly for this reason, British maritime law requires merchant seamen to hold a certificate of medical fitness, which must be revalidated biannually. However, no similar health surveillance is prescribed for commercial fishermen, and despite the hazardous nature of their work, their access to occupational health services is minimal.

One pointer to a need for compulsory standards of medical fitness for commercial fishermen would be the occurrence of substantial numbers of life-threatening medical emergencies at sea of a type that might be prevented by periodic medical screening. Also relevant is the prevalence among active fishermen of chronic illness that would carry a high risk of acute and serious complications while at sea, or which might impair ability to carry out safety – critical tasks.

To help assess the case for regulatory medical standards for commercial fishermen, and to identify priorities for the prevention of occupational injuries at sea, we conducted a survey at three major fishing ports in South-West England. In particular, we aimed to explore the frequency and nature of medical emergencies that fishermen had experienced while at sea, their prevalence of chronic disease and use of medication, and the incidence and characteristics of occupational injuries that they have incurred during the past year.

## **Methods**

Subjects were eligible for inclusion in the survey if they were sea-going skippers or crew with primary employment on a commercial fishing vessel working from the ports of Brixham, Plymouth or Newlyn. The study was publicised in advance through: letters to fish markets, registered owners of fishing boats, fish producers' organisations and maritime charities; through posters at fish markets, Royal National Mission to Deep Sea Fishermen (RNMDSF) cafes and Cornwall Fisheries Resource Centre; and through articles on the Cornish Fisheries Resource Centre and Brixham News websites. A member of the research team (HG-P) then visited the ports at

times between 3.00 am and midnight, and identified possible participants by direct approach or introductions from other fishermen. Men who were eligible for study were given a short information sheet about the survey, and those who agreed to take part were asked to sign a form, consenting to interview.

Interviews took place on the quayside, in the fish markets, at the Royal National Lifeboat Institution station in Newlyn, at RNMDSF cafes in Brixham and Newlyn, and at a shellfish association meeting. A short structured questionnaire (see Appendix) was used to collect information about demographic characteristics, history of work in the fishing industry, lifetime experience of medical evacuation while at sea, illness and use of prescribed medication in the past 12 months, and injuries in the past 12 months while working at sea on a fishing boat. In addition, at the end of the interview, participants were invited to suggest any practical changes that might improve their safety or health when working as a fisherman.

Data from the questionnaires were entered into a computerised database, and simple descriptive statistics were derived with SPSS Version 12 and STATA Release 10 software. Confidence intervals (CIs) for rates of medical evacuation and occupational injury were based on the Poisson distribution.

Ethical approval for the study was provided by the Health and Safety Executive Research Ethics Committee.

## **Results**

Interviews were completed by 210 (68%) of 307 fishermen who were approached. Of the remainder, 16 declined to participate in the study, four could not speak English, and 77 were willing to give an interview, but could not do so at a suitable time. The ages of the participants ranged from 18 to 77 years with a mean of 44 years. On average, they had worked as commercial fishermen for 25 years (range 1-60 years). Most currently worked in potting for shellfish (34%) or on small (<20 metres) trawlers (27%), or larger trawlers (27%), or in gill netting (18%) or hand lining (18%) (65 were engaged in more than one fishing method).. Ninety six (46%) described themselves as skippers, and most others worked as deck hands, although in some cases with additional roles (e.g. as a cook, engineer or mate).

Fifty six subjects (27%) reported that they had been returned to shore as an emergency for medical reasons, at least once in their career. The total number of emergency evacuations (77) corresponded to a rate of 14.6 (95% CI 11.5-18.2) per 1000 man-years. The large majority of emergency evacuations were for acute injuries, most commonly multiple injuries (16), fractures (12) and amputations (11). Only five were for illness (two cardiac arrests, one renal colic, one acute appendicitis and one exacerbation of asthma).

Fifty six participants (27%) reported at least one illness, which in the past 12 months had led them to consult a doctor (22) to miss more than three days from work (7) or both (27). The most common illnesses described were musculoskeletal disorders and infections (Table 1). Two of the infections followed hand injuries by dogfish spines, and one occurred as a complication of a hand laceration that the injured fisherman had stitched himself. The one reported dermatological illness was also work-related (a disorder known locally as Dogger weed itch and elsewhere as Dogger Bank itch, which is a contact dermatitis caused by allergy to the (2-hydroxyethyl) dimethylsulphoxonium ion, a metabolite produced by the marine Bryozoan *Alcyonidium diaphanum*.<sup>9</sup>

Eighty three participants (40%) had used at least one prescribed medicine in the past 12 months, the most common treatments being analgesic/anti-inflammatory drugs and antibiotics (Table 2). Ten men had used bronchodilators and/or inhaled corticosteroids, but none had taken oral corticosteroids. Three men had been treated with oral hypoglycaemics, and three had used anticoagulants (including two who took warfarin while at sea). Among five men who had used cardiac medication, four had been treated for angina (including both of the men who had suffered cardiac arrests while at sea), and a fifth (one of the two men treated with warfarin) had taken digoxin for an arrhythmia.

Fifty five fishermen had suffered injuries in the past 12 months while at sea, which had prevented them from doing their job for at least 15 minutes, a prevalence of 26% (95%CI 20%-33%). This included 16 men with several such injuries (range 2-20), most of whom described recurrent back or upper limb complaints. Most injuries had required treatment by a general practitioner or as an outpatient at hospital (including at the Accident and Emergency Department), but six had led to hospital admission. Twelve injuries had caused more than three days to be lost from work. Injuries occurred most frequently during the preparation of fishing gear, handling or preparing

fish, and lifting or other manual handling. Lacerations (reported by 36% of injured men), sprains and strains (22%), contusions (20%) and fractures (18%) were the most commonly reported injuries. Four of the 15 reported hand lacerations, and also a laceration to the thigh, had been stitched by the injured fisherman himself, while several other lacerations had been bound with “Gaffer” tape. Neither the age nor type of fishing was significantly associated with occupational injury in the past 12 months.

Altogether, 151 participants responded to the open question about changes that might improve health and safety for fishermen. Various ideas were put forward concerning equipment and training, but the most consistent complaint (13 men) was of difficulty in accessing dental services.

## **Discussion**

This survey identified a small number of fishermen with chronic medical disorders that might impair safe operation of a vessel or result in life-threatening emergencies while at sea. However, injuries were a much more common cause of emergency medical evacuations than illness. Laceration of the hand was a particularly frequent injury, immediate treatment for which was often less than optimal.

Because of the way in which their work is organised, accessing and recruiting fishermen to epidemiological studies is a challenge. There is no readily available register that can be exploited as a sampling frame, and with the resources that were available to us, we were therefore obliged to use a convenience sample. However, the men studied constituted a substantial part of the eligible study population (the most recent figures available suggest a total of 1020 fishermen in the whole of the South-West catching sector<sup>10</sup>. Moreover, we took care to recruit on multiple days at each port, covering most times of day. Also, refusals from eligible subjects were rare (only 5% of those approached).

A bigger concern for the representativeness of the study sample is the exclusion of fishermen who were temporarily incapacitated at the time of the survey through illness or injury, and of ex-fishermen who were no longer employed in the industry at the time of the survey. In particular, this may have caused the study to underestimate the prevalence emergencies at sea through omission of men with

more severe injuries or disease that had caused them to die or give up work as a fisherman.

Another possible source of bias was inaccurate reporting of injuries and illnesses. The possibility of incomplete recall, especially for events many years in the past, cannot be ruled out, but we think it unlikely that participants intentionally concealed information from us. By careful preliminary engagement and communication, we were able to secure the trust of the communities that we were studying, and our impression when conducting interviews was that participants were pleased that interest was being taken in their welfare.

Because recruitment was restricted to men currently working as fishermen, and because recall of past events may have been incomplete, the reported lifetime rate of medical evacuation while at sea (14.6 per 1000 man-years) is likely if anything to be an underestimate. However, despite this high incidence of medical emergencies at sea, only a small proportion of incidents were of a type that might readily be prevented by regular health screening. Nor did we find evidence that many fishermen suffered from chronic disease that would call into question their fitness to go to sea. In the 12 months prior to the survey, 10 men had used bronchodilators or inhaled corticosteroids, but none had taken oral corticosteroids, and only three had consulted a doctor or lost time from work because of asthma. Of greatest concern were two men who had previously suffered cardiac arrests while at sea, three others who were being treated for angina or a cardiac arrhythmia, and a further individual who took warfarin while at sea. However, without more detailed clinical assessment, it is not possible to judge how many of these illnesses posed risks that would warrant restrictions on work at sea. It may be that medical selection already occurs informally, such that men with higher risk diseases elect not to enter or remain in work on fishing vessels.

As expected, we found a high rate of occupational injuries among our study participants. Prevention of some injuries is difficult given the challenging environment in which fishermen are obliged to work. However, it seems likely that more could be done than at present. Of particular concern is the large number of hand injuries, both lacerations and finger amputations, that were reported. This finding accords with earlier observations from an analysis of hospital attendance for accidents among commercial fishermen in Scotland.<sup>11</sup> A study of small-scale commercial fishing in the USA found no evidence that use of gloves protected

against hand injuries,<sup>12</sup> but there may be a case for wider use of better designed winches on fishing boats, and perhaps also for better training in techniques for use of knives while at sea. As a first step, it would be useful to conduct further research looking in more detail at the circumstances and nature of hand injuries in fishermen.

Especially notable was the frequency with which fishermen sutured their own lacerations, or bound them with non-sterile tape. In one case, at least, this self-treatment was followed by a wound infection. This information should be taken into account in first aid training for fishing crews, and in planning the first aid equipment that is kept on board fishing vessels.

Also of concern is the difficulty that multiple participants reported in obtaining dental treatment. Access to dental services under the British National Health Service is recognised to be a widespread problem,<sup>13,14</sup> but is particularly difficult for fishermen, who are away from home frequently and unpredictably, depending on the weather. Consideration should therefore be given to the institution of special arrangements in major fishing ports that would enable fishermen to access dental services at short notice more easily.

In summary, the high incidence of hand lacerations among our study sample suggests that the prevention of such injuries should be a priority, with first aid training and equipment for fishing crews to improve their care when prevention fails. We identified a few individuals with medical conditions that had potential to impair safe operation of a vessel or to result in life-threatening emergencies while at sea. Because of the limited size of the study, it is not possible to draw firm conclusions on the value of regular medical screening for commercial fishermen, but given the relative frequencies of accidents and illness as causes of emergency evacuations, such screening should be considered a lower priority than accident prevention. Finally, it would be helpful if fishermen could have better access to dental services at short notice, perhaps through special arrangements in the major fishing ports.

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**Table 1**      **Prevalence of illness in past 12 months**

<b>Illness<sup>a</sup></b>	<b>Numbers of Participants</b>	<b>Prevalence (%)</b>
Back pain/sciatica	15	7
Other musculoskeletal disorders	16	8
Respiratory infections	6	3
Other infections	10	5
Gastro-intestinal disorders	4	2
Asthma	3	1
Other	8	4
Any illness	56	27

<sup>a</sup>Illness leading to medical consultation or absence from work for more than three days

**Table 2 Use of prescribed medication in past 12 months**

<b>Medication</b>	<b>Numbers of Participants</b>	<b>Prevalence (%)</b>
Analgesics/anti-inflammatory drugs	47	22
Antibiotics	17	8
Hypotensives	15	7
Drugs for dyspepsia	14	7
Bronchodilators/inhaled corticosteroids	10	5
Antidepressants	7	3
Cardiac drugs	5	2
Oral hypoglycaemics	3	1
Anti-coagulants	3	1
Other	12	6
Any prescribed medication	83	40

**APPENDIX**

Questionnaire (24 September 07 revised)

**SERIAL NO:**



**Occupational Injury and  
Chronic Illness in Commercial  
Fishermen in South West  
England:  
A pilot study**

The answers given on this form are confidential.  
Replies will ONLY be seen by the small research team.

**SECTION A: ABOUT YOU AND YOUR WORK**

1. How old are you?
  
2. How old were you when you first went to sea as a fisherman?
  
3. How many years in total have you worked as a fisherman?
  
4. On what size vessel do you work?
 

<input type="checkbox"/> Over 20 metres	<input type="checkbox"/> 15 - 20 metres
<input type="checkbox"/> 10 - 14 metres	<input type="checkbox"/> Under 10 metres
  
5. What is/are the method(s) of fishing used on your vessel? *(Please tick all that apply.)*

<input type="checkbox"/> Beam trawling	<input type="checkbox"/> Trawling
<input type="checkbox"/> Scalloping	<input type="checkbox"/> Gill netting
<input type="checkbox"/> Potting	<input type="checkbox"/> Hand lining
<input type="checkbox"/> Other _____	
  
6. How long have you worked on your present boat?  months or  years
  
7. What is your job on the boat (eg skipper, mate, deckhand, cook, engineer)? \_\_\_\_\_
  
8. How many people, including the skipper, usually work on the boat?
  
9. On how many days in total have you been at sea over the past 12 months?
 

<input type="checkbox"/> Less than 10	<input type="checkbox"/> 10 - 49	<input type="checkbox"/> 50 - 99	
<input type="checkbox"/> 100 - 149	<input type="checkbox"/> 150 - 199	<input type="checkbox"/> 200 or more	<input type="checkbox"/> Don't know
  
- 9.a And how many landings have you made?   Don't know



SERIAL NO:

**ACCIDENT SHEET**

a) Accident number

b) What were the circumstances of the injury (eg slipped and fell, cut hand with knife, caught finger in machine)?

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c) What was the nature of the injury (eg bruise, cut, fracture, burn) and what parts of the body were affected?

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d) For how long did the injury stop you doing your normal job?

15 - 59 minutes  1 - 3 hours

4 - 24 hours  1 - 3 days

More than 3 days

e) What medical care did you receive for the injury? *(Please tick all that apply.)*

None  First aid only

GP  Hospital outpatient

Hospital inpatient

Other \_\_\_\_\_

**SECTION C: ILLNESS IN THE PAST 12 MONTHS**

13. During the **past 12 months**, have you suffered from any illness that was bad enough for you to see a doctor or miss more than three days from work? No  Yes

*If NO, please go to question 14. If YES, please give details. (Please tick all that apply.)*

Nature of illness	Medical care			Number of days unable to work
	GP	Hospital outpatient	Hospital inpatient	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>
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	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>



**SECTION E: YOUR HEALTH NEEDS**

15. Do you think there are any practical changes that could improve your safety or health when working as a fisherman?

No  Yes

*If YES, please give details.*

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