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## **FISHERMEN'S PERCEPTIONS OF RISK**



Photograph and caption by Earl Dotter.

A First Mate repairs a jammed pulley block at the end of an outrigger. Heavy steel 'birds' have just been lowered from the starboard and port side outriggers to increase the stability of the boat on the open ocean.



# FISHERS' ATTRIBUTED CAUSES OF ACCIDENTS AND IMPLICATIONS FOR PREVENTION EDUCATION

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## INTRODUCTION

Commercial fishermen are employed in one of the most dangerous jobs in Canada [Marshall 1996]. Additionally, fishermen downgrade the risk of their occupation through their tendency to not report work injuries [Jensen 1996]. This lack of reporting injuries ties into the way they look at the issue of risk in their profession. Fishermen have established a pattern of denial and trivialization as part of their occupational subculture [Pollnac et al 1995]. They do this in order to relieve the psychological pressures that occur when they are forced to constantly face the reality of the dangers of their occupation. This propensity to deny risk and not report non-life-threatening injuries confounds the statistical analysis of overall work related injuries and results in a lack of documentation of the risk in the occupation.

Policy makers have traditionally ignored the human, behavioral, and attitudinal factors even though American and Canadian analysis of fishing vessel accidents indicate that human factors directly or indirectly contribute to 70 percent to 90 percent of incidents [National Research Council 1991]. Researchers have not usually considered fishermen's accident stories, and have often functioned

from an objective and quantifiable view of the world. This study challenges the traditional concept of the objective world and its “technical control” approach to knowledge by focusing on fishermen’s subjective interpretations of fishing safety. Instead of starting with information accumulated by “experts” and data taken from government files, this study starts by looking at the fishermen’s own words.

Research by Thompson et al [1998], on the broader topic of workplace safety, affirms the importance of perceptual data of the workers. Their research acknowledges that workers possess insight and sensitivity surrounding unreported workplace accidents. It concludes that this insight possibly makes the workers’ perceptual data, “the preferred criteria for safety research.”

The intent of the study described here was to legitimize fishermen’s knowledge and accumulated experiences. It also shares the complex world of lived experience from the point of view of those who live it. This study identifies fishermen’s attributed causes of accidents through an analysis of their descriptions and offers an alternative way of looking at prevention education for fishermen.

## **METHODS**

This research involved naturalistic inquiry; therefore the researcher employed a qualitative methodology. The participants were 12 professional fishermen who lived and worked on the West Coast of British Columbia. A purposeful sampling strategy was used to ensure that the participants came from a variety of backgrounds in terms of ethnic origin, age, position of crew or skipper, gender (see Table 1), vessel type, and size. The vessel types included seiner, gillnetter, troller, dragger, longliner, and trapper. The vessels ranged from 30 to 70 feet and construction materials included steel, fiberglass, wood, and aluminum. All participants had either experienced a personal occupation related injury or been involved in a maritime emergency incident.

Fishing accidents occur within a complex, multilayered, social environment. Fishermen live in, work in, shape, and are shaped by that environment. Their personal accounts of their accidents were the essence of this research. Interviews were the primary data source, capturing the fishermen’s own words, their view of their accidents and their attributed causes. Interviews were tape recorded with the permission of the participants. The researcher transcribed

**Table 1.** Summary of the Ethnic Background and Additional Socio-cultural Details of the Participants

Participant number	Ethnic Background	Skipper or Crew	No. of Yrs. Fishing	Age	Family Attachment to Fishing	Sex
1	Yugoslavian	Skipper	30 years	45	Extensive, many generations, including family in Yugoslavia	Male
2	British/Nfld.	Skipper	40 years	72	Over 100 years of family fishing on B.C. west coast. Not in Britain.	Male
3	British	Skipper	43 years	56	Grandfather & father fishermen since 1930's. Not in Britain.	Male
4	Nova Scotian	Skipper	20 years	38	Uncle, brother fishermen. Not father. Not others in past generations.	Male
5	First Nations	Skipper	40 years	58	Extensive, all male relatives fishermen for many generations.	Male
6	First Nations	Crew/Skipper	38 years	55	Extensive, all male and some female relatives fishermen for many generations.	Female
7	First Nations	Crew/Skipper	23 years	37	Extensive, all male and some female relatives fishermen for many generations.	Male
8	Japanese	Skipper	45 years	59	Father fisher, but not prior generations in Japan.	Male
9	French Canadian	Crew	5 years	32	No prior family history of fishing.	Female
10	Vietnamese	Crew	6 years	21	Father fisher. Prior family history of fishing in Vietnam.	Male
11	Japanese	Skipper	28 years	36	Grandfather & father fishermen on B.C. west coast. Not in Japan.	Male
12	Norwegian	Crew/Skipper	5 years	24	Father, brother fishermen in Canada. Grandfather some in Norway.	Male

the interviews, coded, and organized them within a conceptual framework. Each transcribed interview was analyzed for significant themes. Through this inductive process, 22 categories of attributed causes emerged.

Attribution theory was selected as the conceptual framework through which to analyze the data gathered from the fishermen's descriptions of their accidents. It was selected because of its straightforward approach to analyzing the causes of events and its use in other workplace safety research. A central principle of attribution theory is that people are active information processors who attempt to make meaning out of observed events [Heider 1958, Kelley 1967].

Heider [1958] initiated the examination of how people process information. He made the foundational causal distinction in attribution theory when he stated that the outcome of an action depends on two factors, those within the person (internal) and those within the environment (external). Internal attributions assign the origin of the behavior to personal characteristics and inclinations, whereas external attributions assign the origin of the behavior to environmental pressures and situational conditions. This is called the locus of causality dimension. Weiner proposed a second causality dimension because for both internal and external causes, some remain constant, while others fluctuate [Weiner 1985, Weiner et al 1971]. He labeled these stable and unstable. For example, he classified task difficulty as external and stable, and effort as internal and unstable. In the context of workplace safety, different attributions will result in different approaches to accident prevention. The locus of causality and stability dimensions are represented by two intersecting lines on the conceptual framework (see Figure 1 in "Results") and create four quadrants: external/stable, external/unstable, internal/stable and internal/unstable.

People are most likely to focus on making an attribution when the event has a negative outcome, or personal consequence [Shaver 1985, Weiner 1986]. A work related accident represents an event with a negative impact. DeJoy [1985, 1994] suggests that these attributed causes play a role in all practices incorporated into a company's overall safety plan, and that the attributions personnel make regarding safety and accidents drive the decision making process more than the causes themselves.

A person's (in this study, the fisherman's) ideas of causality are significant determinants of their future behavior. The person must first assign a cause or causes to an outcome. They can then consider a prescription for future action.

Weiner [1985] suggests, "one might argue that adaptation is not possible without causal analysis."

The analysis of the fishermen's words was modeled on the works of Weiner [1985, Weiner et al 1972], and the attributed causes were assigned to the quadrant category that most closely matched those that he had worked with. For example, he assigned luck (as an attributed cause) to the external/unstable quadrant, and ability to the internal/stable quadrant.

Three strategies were employed to examine the trustworthiness of the researcher's judgments regarding the transcripts and final interpretation of the data [Lincoln & Guba 1985, Marshall and Rossman 1989]. The strategies included using a research partner (consistency,) conducting a participant review (credibility,) and comparing with another study (triangulation). All three strategies indicated agreement with the researcher's interpretation of the data.

## RESULTS

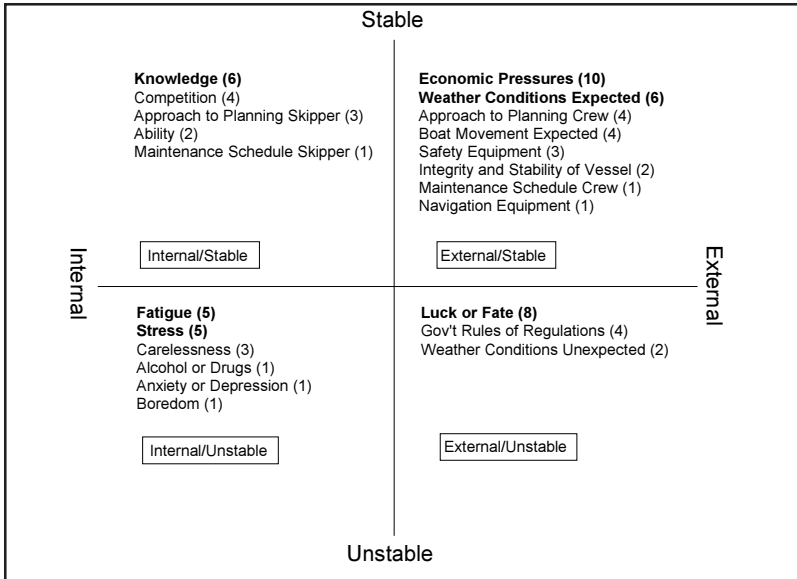
The participants of this study attributed the causes of their accidents to all quadrants of the orienting framework, indicating a broad distribution of causes. (See Figure 1.) They attributed multiple causes to a given accident and their explanations were complex. The fishermen's perspective and their words were critically important in this study. Key phrases that reflect some of the specified attributed causes are presented below (as indicated by the bold type in Figure 1.)

### INTERNAL/STABLE

*Knowledge:* Some fishermen attributed a cause to be the lack of Knowledge in relation to a specific piece of information that was missing, or that was not applied properly to the circumstances and had a significant effect on the outcome. Six of the 12 participants cited some lack of knowledge as one of the causes that contributed to the accident. Two described situations that related to a combination of the weather and a new fishing ground, two described issues that related to the use of equipment, and two cited events that related to an inexperienced crewmember standing in the wrong location.

Participant 11: "That was the first time that I have ever anchored in there. . .but you think that you know everything. . ." (sinking of boat).

## Fishermen's Perceptions of Risk



**Figure 1.** “Categories of causes” nested within the two dimensions that frame the fishermen’s attributed causes of accidents.

(\*The numbers in parentheses, represent the number of participants who attributed each cause as a factor in their accident. The causes in bold/italics are reviewed in detail.)

Participant 5: “I didn’t realize that it (the pump) was actually pumping in...”(flooding.)

Participant 2: “I didn’t realize that there was this pause with it (the sounder)...I was fooling with it when I shouldn’t have been, I had enough knowledge to do it without it...”(grounding.)

Participant 7: “...it wasn’t a safe place to be...we warned him not to stand there.” (Crushing injury to leg.)

### EXTERNAL/STABLE

*Economic Pressures*: The most frequently attributed cause of accidents related to economic pressures. Ten out of 12 of the participants included economic pressures as one cause of their accident. The fishermen brought up concerns about money issues and worries of catching enough fish to buy or pay for new equipment, ongoing bills, or to keep the crew and/or the company satisfied.



They cited these pressures as part of the decision making process that led to the outcome.

Participant 3: "I needed to have...that extra money from catching that extra fish...I had a new net...to pay for..." (man overboard.)

Participant 6: "...to pay the bills...the first two drifts...are the best for the whole day..." (crushing injury to hand.)

Participant 9: "we wanted to keep fishing...he (the skipper) had a big investment into the boat and the (new) equipment..." (near loss of boat.)

Participant 11: "...they (the crew) are out here to make money and every fish that comes aboard means money to them." (Sinking of boat.)

Participant 12: "...put ourselves under pressure...otherwise no one is going to make...any money." (Downflooding of boat.)

*Weather Conditions Expected:* There was a difference between fishermen's attributed cause where they had been caught "off guard" because of the weather versus a cause where they had knowingly "challenged" the weather. For weather conditions expected, some fishermen had been fully aware of adverse weather conditions and had simply accepted them as normal. Six of the 12 participants attributed one of the causes of their accident to weather conditions expected. In comparison, only two participants attributed one of the causes of their accident to weather conditions *unexpected*.

Participant 11: "Well, right off the start, we knew that there was bad weather...and thought there wouldn't be much of a problem." (Sinking of boat.)

Participant 9: "...it said there was gonna be storms...there were about 42 or so other boats around us...After a couple of days the fleet was down to 12 boats. They were heading for cover cause they heard about a big storm coming." (Near loss of boat.)

Participant 10: "...it was first of all the weather out there was really bad...because of the wind, the amount of action..." (foot entangled in line.)

The fishermen tended to view bad weather as an accepted aspect of the job and treated what most people would view as an extraordinary situation as ordinary.

## **INTERNAL/UNSTABLE**

*Fatigue:* The participants attributed fatigue as part of the cause of their accident in five out of 12 of the interviews. Three out of five of the fatigue descriptions occurred when the skipper simply had to get some sleep. This resulted in a less experienced crewmember taking the wheel or the skipper falling asleep at the wheel. The other two were situations when the crewmember was tired out from days of fishing. Fishermen described fatigue as being an expected part of the job but they also realized that it added another challenge to their ability to perform their job safely.

Participant 4: "...I got him up first to watch...So I just get my head down and almost fell asleep and we got 60,000 pounds of fish on board, and I feel, bang, right under the keel..." (Grounding.)

Participant 8: "...everybody tired of course...so I was on the wheel...I fall asleep..." (Striking a rock.)

Participant 10: "...and you get really tired...It is very tiring...I had just woken up, I wasn't fully awake yet...wasn't really watching..." (Leg entangled in line.)

*Stress:* All five participants who included stress as one cause of their accident were skippers. Stress was attached to the responsibility of being the skipper and all that entails, from making a good catch, getting a good price for the fish and everyone making money, to coping with competition of other boats, and keeping crew or company happy.

Participant 1: "...the stress factor...the captain's got all the pressure...feels like you are going to war...pressure from the boss..." (Partial finger amputation.)

Participant 3: "...a very stressful day...hurried...in the heat of the situation...the stress of trying to catch as many fish..." (Man overboard.)

Participant 4: "...I had stress from the economics of the times...stressful due to the government and we knew it wasn't good to be there..." (Grounding.)

The issue of ultimate responsibility weighed heavily on the skippers with concern for the company and/or crew.

## **EXTERNAL/UNSTABLE**

*Luck or Fate:* Next to economic pressures, the second most cited cause related to the fishermen's mention of luck or fate. This cause was noted by eight of the 12 participants. Most fishermen used the word luck and often attached it to a phrase like, "It could happen to anybody," or "It was just one of those accidents...." Some fishermen seemed to take a broad approach to how luck affected them or how it was part of the cause of the accident.

Participant 2: "Well, I always said if I didn't have bad luck I wouldn't have any. If it has got to go wrong, I'll be at the top of the list..." (Grounding.)

More frequently, they saw that luck or fate played a role in their survival despite the danger.

Participant 9: "We made it back. Guess when your number's up, your number's up, and ours wasn't up yet ... somehow I guess it wasn't our time yet...." (Near loss of boat.)

Participant 3: "Luckily the net on the drum had caught itself and it wasn't paying out anymore so I had something tight to pull myself back onto the boat....lucky, (because) if the drum hadn't stopped..." (Man overboard.)

Many fishermen seemed to use luck or fate as a "catch-all" cause that was mainly expressed as an afterthought on how or why they survived the situation or were spared from more severe consequences. When luck or fate was mentioned, it was *not* focused upon as a primary issue.

The foregoing has given examples of the six most frequently cited attributed causes of accident in the fishermen's own words.

## **DISCUSSION AND RECOMMENDATIONS**

Through fishermen's own accounts, and the analysis of those stories, this study found that fishermen attribute their accident to a broad spectrum of causes, a significant portion of which reside outside techno-rational concerns that focus on maintenance of machinery, and safety equipment in general. This suggests

that more complex issues are involved. The logical question to ask is what can this research offer to the field of prevention education for fishermen if attributed causes for accidents reside both in the techno-rational (external/stable) and significantly in the other three quadrants of attributions (external/unstable, internal/stable, and internal/unstable).

Causes that fishermen attribute to their accidents offer insights into their safety considerations. This study identified 22 categories of causes as cited by participants. Nine of the 12 participants attributed causes of accidents that were located in all four quadrants of the conceptual framework. This is of interest because current training regimens tend to address concerns that reside in the external/stable (or techno-rational) quadrant.

This study is not concerned with whether fishermen's attributed causes of accidents are correct or incorrect. Rather, it suggests that the wide spectrum of attributed causes need to be acknowledged when considering the content of prevention education programs for fishermen.

Recommendations include making the collective attributed causes of accidents visible to fishermen as part of prevention education. One way to do this would be to focus the attributed causes of fishing accident through the lens of risk taking.

The American Society of Safety Engineers defines risk assessment as “the amount or degree of potential danger *perceived* (italics added) by a given individual when determining a course of action to accomplish a given task” [Abercomie, 1988.] It is the fishermen's perceptions of risks and attributed causes that are likely to direct their actions toward safety. These *perceived* causes provide insight into the initial steps of the risk assessment process and offer possibilities for prevention education.

From a practical adult education point of view to discuss attribution theory and safety with fishermen is unrealistic. It is more realistic to speak to fishermen about their perceived risks, and how the findings of this study might augment their understanding and assist them in reassessing their awareness of risk. In short, fishermen might ask themselves, “yes, these are what I identify as leading to my accident – in retrospect, was that taking an informed risk?”

Participatory group discussions and activities would allow the fishermen to discuss their own accident and near misses. They could be given a list of the 22 categories of causes identified from this study and asked to rank the causes according to their perception of the risks associated with each.

The comparison of risks in the suggested activity may help convey the nature and size of a specific risk estimate for fishermen. Such comparisons would be a starting point for them to systematically address risks attached to different decision options. In the future, they may reconsider options available to them during their decision making process and more readily ask themselves the questions, "Am I taking an informed risk? What can I do to control or eliminate that risk?" Without the discussion and exercise these risk comparisons may not be apparent.

Fishermen's attributed causes of accident represent a link to their perceived safety concerns. Instead of trying to down play or ignore the fact that fishermen take risks, the proposed approach suggests acknowledging the attributed causes of accident. Using that information, fishermen can then gain insight into their own risk taking and decisions to minimize those risks.

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# **RISK PERCEPTION AMONG FISHERMEN AND CONTROL OF RISKS THROUGH PARTICIPATORY ANALYSIS OF ACCIDENTS AND INCIDENTS**

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## **INTRODUCTION**

Although occupational injuries and fatalities are common in commercial fishing, safety work is often not given priority by the fishermen. The opinion among the fishermen that safety measures induce additional cost, which may not be carried by these small enterprises, was approached in another study [Törner et al 2000]. However, behavioral and psychological factors should also be considered in the context of safety work. As stated by Runyan [1993], safety work should focus on both structural and psychological change. In studies of commercial fishing, attitudes of fatalism and risk acceptance, risk perceptions, social norms, and cultural patterns have been claimed to counteract active safety work and rather be directed towards handling the job, in spite of the risks [Pollnac and Poggie, 1989; Murray and Dolomount, 1994]. Stimulating safe behavior through attempts to increase risk awareness is a common strategy. This may not, however, lead to altered behavior as long as present behavior is more or less imperative, as may well be the case in commercial fishing, or if

the subjective value of the risky behavior outweighs the risks. The purpose of the present study was to investigate fishermen's attitudes towards risks in their occupation and attempt to influence these attitudes towards an enhanced sense of controllability of risks and towards an increased activity in safety work.

## **METHODS**

A questionnaire investigation was performed of fishermen's attitudes ( $n = 92$ ) toward risks in their occupation. The investigation focused on associations between psychological factors such as accident experience, perceived personal risk, perceived manageability of risks, locus of control, risk acceptance and technical knowledge, and on activity in safety work. The questionnaire study was based on certain concepts from stress research. Problem focused coping refers to the degree to which the individual copes with stressful (here hazardous) situations through attempts to control risk factors and increase his competence to exercise such control. The degree of active, problem focused coping is, according to theory, influenced by perceived personal risk, perceived manageability of the threat and individual coping resources, such as individual beliefs about locus of control over one's fate [Rotter 1966] and skills that can be used in coping.

Subsequent to the questionnaire study two discussion groups were formed, each consisting of two to three fishing crews. The groups met six times over eight months. The meetings were led by a psychologist and an ergonomist who were well-acquainted with fishing. The role of these group leaders was mainly to keep the discussion on the track and to pose questions. An Occupational Health and Safety (OHS) engineer also participated in each group to offer technical support and also to learn how to conduct this type of meeting. Between meetings the crews were requested to log incidents and accidents in connection to the fishing activity. At the meetings each incident and accident that had taken place on the vessels since the preceding meeting was related by the crews and analyzed in a structured manner. The analysis was directed towards tracing the course of events, identifying the basic cause of the incident/accident as well as the releasing factors. During and after the analysis the group discussed possible preventive measures.



Results of the intervention (i.e., the discussion groups) were evaluated through a follow-up questionnaire study (six persons where each individual was his own control) and an interview with the fishermen participating in the discussion groups comprised of ten persons. (One could not be reached). The interview contained 20 questions about the amount of activity crew members spent in safety-related activity, and their attitudes about this work. We asked these questions both before and after participation in the discussion groups. We also asked them about the methodology of the study, and their attitudes toward continued participation in discussion groups of a similar character. In order to minimize the effect of bias, a person unknown to the fishermen performed the interviews.

## RESULTS

The initial questionnaire study showed that the fishermen considered the risks in connection to ten typical working situations in commercial fishing as moderate but satisfaction with safety was relatively low. The risks were perceived as manageable to a relatively high degree. Fatalism was not a predominant trait, i.e. the fishermen to a high extent perceived an internal locus of control. Also, fearlessness or risk acceptance was moderate. Activity in safety work was expressed as relatively high. Fishermen who expressed confidence in risk control through technical measures and working methods reported higher activity in safety work. Activity in safety work was also positively correlated to perceived sufficiency of technical knowledge to handle equipment on board whereas a negative correlation was found between activity in safety work and fatalism. No association was found between activity in safety work and age, experience as fishermen or accident experience (victim or witness), respectively.

During the eight months of the intervention 43 incidents and accidents were reported. The analysis showed that in 34 of these cases the basic cause was of a technical nature, 5 were caused by deficient work organization and 4 cases were caused by faulty actions by an individual at the instant of the event. The most common factors were weather conditions (16 cases), deficient routines (10 cases) and equipment in bad shape (8 cases). In the interview follow-up of the discussion groups the fishermen stated an increased activity in safety work. The participants also stated a higher interest in safety issues and an interest in continuing the discussion groups.

The questionnaire follow-up indicated that the perceived level of risk was lower after the intervention concerning working situations that had not been much discussed during the meetings, whereas risks in connection to those situations that had been discussed were perceived as higher after participating in the discussion groups. There was a lower perceived manageability of risks after the intervention but also a tendency towards a decrease in fatalism and fearlessness. Increased activity in safety work was also found in this follow-up.

## DISCUSSION

The questionnaire study indicated that effective intervention strategies for increasing activity in safety work should be based on raising risk awareness in parallel with raising the sense of risk manageability through technical measures and improved working methods. This is in concordance with the theories of problem focused coping being influenced by perceived personal risk, perceived risk manageability and perceived locus of control.

Since activity in safety work showed no correlation with accident experience, intervention strategies may also be made more effective if learning from experience be developed (i.e., by identifying courses of events and how these may be influenced through preventive measures at different stages.)

As many as 34 of 43 accidents and incidents were caused by technical shortcomings. This is, in a way, encouraging since it shows the large potential for effective and reliable prevention through technical measures.

Certain types of events occurred repeatedly. One example of this was slipping. These incidents were, however, often not noted in the incident/accident logbook, but only reported on direct questions. Injuries involving falls to the same level were found in another study [Törner and Nordling, 2000] to be the most common cause of serious accidents in Swedish fishing, and slips were the mechanism behind 15 percent of serious accidents in fishing reported to the Swedish Labor Market No-fault Liability Insurance in a 12-year period. This indicates that the most prevalent hazards are ignored just because they are so prevalent.

The finding that there was a decrease in perceived manageability of risks after the discussion groups was obviously surprising and discouraging. It is possible

that the eight months during which the groups met was too short a time to obtain the goal of increased perceived manageability. At the same time it should be noted that there was a tendency towards increased risk awareness for those working situations that had been discussed to a major extent during the meetings, that the activity in safety work had increased while fatalism and fearlessness had decreased. It should also be noted that the statistical power of this follow-up questionnaire study was low, since it encompassed only six persons.

All the interviewed fishermen expressed an interest in continuing the group meetings, under the leadership of the OHS Services. In this case they felt that participation of more crews would be beneficial and some felt that the meeting frequency could be somewhat reduced.

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# THE USE OF NARRATIVE THEORY IN UNDERSTANDING AND PREVENTING ACCIDENTS IN THE FISHING INDUSTRY

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## INTRODUCTION

Research into the causes of accidents in the fisheries is limited (Murray et al 1993) and has tended to be descriptive with limited reference to broad theoretical frameworks. Over the past decade there has been a sustained debate about broad epistemological and methodological issues within the social sciences. Among others, there has been increasing interest in narrative theory. This approach basically argues that human beings are natural storytellers and that the exchange of stories permeates our everyday social interaction [Murray 1997, 1999, 2000]. Narrative psychology seeks to explore the different stories that people tell, not only for the insight they provide into the actual character of the experience described, but also for the insight they offer into the identity of the storyteller and of his or her culture. The aim of this study was to collect and interpret fishermen's stories about accidents. It is argued that detailed analysis of these stories not only provides insight into the causes of accidents but can also suggest strategies for prevention.

## **METHOD**

The study focuses on Newfoundland inshore fishermen. Newfoundland is a large island off the east coast of Canada, which was largely settled by Irish and English people in the seventeenth and eighteenth century. Interviews were held with more than 40 fishermen from different parts of the island. The fishermen were selected at random and included men of different ages and with varying amounts of experience at sea. The interviews were semi-structured and sought to obtain from the participants extended narrative on a series of items including:

The experience of being a fisherman;

Their perceptions of accidents, causes and possible means of prevention of injuries, fatalities and/or other adverse events; and

Their perceptions of various safety measures.

All these interviews were held either in the union office or the home of the individual concerned. Interviews ranged in length from 40 to 90 minutes. All the interviews were tape-recorded and subsequently transcribed. It should be noted that none of the fishermen expressed any concern about being tape-recorded and most seemed keen to provide extensive details about their experience of fishing and of accidents they had experienced or observed. The interviews were subsequently transcribed and read for consistent themes.

## **FINDINGS**

### **JOYS OF FISHING**

Fishing was something that the men enjoyed although they found it difficult to express in words the reason for this. They described a sense of freedom, the feeling of achievement in getting a good catch, the whole lifestyle of being a fisherman, all of which they found attractive. For example:

“I loves it...the excitement I finds, when you are hauling the trap you can see the fish going, right...same as when you're taking gear back, you see the fish coming on the gear. Going and just getting the fish. It's something...whatever job you likes, a carpenter likes seeing a house go up, well, I likes to see fish coming in, same thing I suppose.”

The character of the typical working day varied substantially depending upon such factors as the weather and the fishing season. When conditions are good the fishermen will put to sea before dawn and not return until after midday. As one said:

“You goes three to four o’clock in the morning, and you don’t be in till one or two in the day. When you gets in then you gets rid of your fish...you’re baiting up till seven in the evening, and by the time you gets home then, right”.

## **CHANGES IN FISHING**

In an attempt to contain the rapid decline in fish stocks the government has recently introduced substantial restrictions on the amount and type of fish that can be caught. This has had a direct impact on the livelihoods of the fishermen. It also has had a more indirect impact as the fishermen attempted to evade the regulations they also increased the dangers of fishing. One fisherman described this process:

“Well, like I said earlier, they’re going to risk stuff, like the crab fishery last year, you know, if that had to be at a time when there’s a breeze of wind, there’s fellows going to go, I mean, and that’s going to force me or you to go, or I might be the first one to go, then you’ll go, I mean, that’s ensured, that quota system is not a good system, and anything to do with quota is going to have more risks involved in it. You can give me a quota today and I’m still going to get it as quick as I can because I wants to get at another fishery. I mean, a quota is not the answer to safety in a fishery. And it’s not going to nothing for it; whatever kind of quota it is, not in my view. When we were fishing in our communities, there’s always fellows who took risks, they’re not going to change it...they can bring what rules and regulations they like, people are going to...that’s version of it, as long as that fish is there to catch. But, I mean, you weren’t pressured, you knew that you were going to go back again tomorrow or the next day, if the weather turned bad, and get fish again. But, I mean now, if you don’t, if you goes out the next day to catch it, there’s some fellow to arrest you, see, that’s the difference, and there’s more pressure on people today, a lot more pressure on people today in the fishery than there were years ago. A lot more pressure...fellows are stressed to death sure.”

## **DANGERS OF FISHING**

Most of the fishermen agreed that fishing was a dangerous occupation but in addition, there were certain avoidable risks. As one fisherman put it:

“Dangerous yes, but again, there’s a difference. There’s two kinds of dangers. There’s dangers that’s carelessness, and there’s dangers that you just can’t avoid. Sometimes you got to be in danger, in the fishery. (There’s) a real lot of danger that you just can’t avoid.”

Taking risks was part of being a fisherman, and risks could not be avoided. Admittedly some fishermen took more risks and others fewer but overall to ensure a good catch most fishermen agreed it was necessary to take risks, e.g.:

“That’s the nature of it, I mean, there’s some people, it’s like anything, there’s some people more knowledgeable about a thing, whether they gains it through experience or goes to school, in the fishery people are going to take risks, while the fishery is there, bigger risks than the other people, some people are more successful at it than others, and some people are not taking as big of a risk as long as they makes a go of it, you know, that’s the nature of people, the way I sees it.”

One particular account is very dramatic in portraying the almost existential plight of the fisherman battling with the elements:

“I’ll give you one instance...I went off on the Burgeo Bank there the summer before last. It was a beautiful morning, there wasn’t a hair of wind. I left here twelve o’clock in the night...I got off and I sat my gear, and I laid down and had a nap. And when I got up there was about thirty foot seas and about forty mile winds. And I was out there in a twenty eight foot boat...She rolled down a couple of times and took water over her side and I never seen it done before, or since. It was pretty frightening. Like I say, it was the way the wind was, it was running the same way my gear was going, so I hauled my gear and left to come back in. It was pretty frightening, coming in there was times that I said my prayers, I tell you.”

This story has many classic features. It is dramatic, it pitches the central character in a battle against the elements. It has a moral message: do not trust



the signs of calmness because danger can easily be concealed. Finally, it restates the message that danger is part of fishing.

An added risk recently was the fact that because of the restrictions on fishing, many fishermen now go to sea alone. In this situation one slip could have serious implications, e.g.:

“You got to be careful with nets too. When you’re setting nets by yourself, if you happen to get tangled in them you’re gone. At least if you had a buddy, he could stop the door and go back for you, or something. If you get caught by yourself, you’re not coming back...if you step in the wrong place, you’re going on.”

With the restrictions and the added competition from their fellow workers fishermen felt pressure to take risks they would not have taken previously such as going to sea in rougher weather, overloading their boats, or going close to the rocks, e.g.:

“You’re right out there at the lumpfish you have a tendency to fish too close to the shore, or you are fishing around sunkers, and you know that when you are fishing closer to them that the fishing is better, and there is lots of times when you will end up tapping your boat on the rocks, but you always get a lot more lumpfish than the other fellows if you are fishing around those spots in particular. So if you want to take the chances, maybe if there is ten guys out there maybe one guy will take the chances and go that close and hang in close to the bank, and with the wind on the shore and the wind on the sunkers, if something happens, and the engine cuts off on you, then you are going to be ashore on the rocks, and then she’s all over.”

In this account the fisherman is giving a very complicated explanation of the sequence of events that precipitate an accident. He is not saying that the fisherman is to blame but rather certain circumstances are encouraging greater risk taking which in certain situations on certain days may increase the likelihood of an accident occurring.

Besides the government restrictions on fishing, another recent change that has indirectly had an impact on safety at sea has been the introduction of new technology. In this case this new equipment has led fishermen to ignore possible sources of danger. For example:

“I’ve been kind of careless my own self, especially out there by my own self, and I got an autopilot put on my boat, and usually I’m back there doing the fishing and the boat is just throttling off on her own. A couple of times I’ve almost run into people my own self. Just by not keeping a good watch out. Back in the stern quarter doing the fish and the boat was coming on...I’ve had a few close calls myself...If I had two fellows on board, coming in on land like that, one of us would be up there watching where you were going and the other fellows would be doing fish. So when you are by yourself, you can’t be two places the one time, so...And you got to try to get the fish done before you gets in there. I’ve almost runned into a couple of docks my own self. Shook me up a bit...almost runned ashore one time.”

Throughout this extensive account the fisherman is trying to balance the competing explanations. On the one hand he had not been keeping watch but on the other he had to get the fish cleaned. Blaxter [1993] in her analysis of working class women’s accounts of illness noticed a similar tendency to try to accommodate or balance what might seem contradictory explanations.

## **DISCUSSION**

The overall purpose of the study was to clarify the factors that contribute to the high rate of accidents among fishermen. The method employed was the collection and interpretation of detailed narrative accounts about their working life from a sample of fishermen. This paper has presented some extracts from these accounts to illustrate some central themes.

Most of the fishermen agreed that the fishing industry is inherently dangerous. This was due to a variety of factors including the unpredictable nature of the weather and the sea and the physical demands of fishing and of the equipment. Despite these dangers most of the fishermen enjoyed this work. Indeed the very excitement due to these dangers could be said to contribute to this high level of job satisfaction. Recently, however, the government-imposed restrictions had contributed to a high level of demoralization.

In view of the dangerous nature of the work the fishermen had to continually exercise caution and be aware of changing circumstances. It was obvious that while the work itself was inherently dangerous the actual level of risk for the individual fishermen could be ameliorated by care and caution. In explaining

this process the fishermen gave considerable detail to balance individual responsibility against uncontrollable circumstances.

Admittedly, certain fishermen were more risk-taking than others. But these individuals were the exception rather than the rule. However, the recent government restrictions and controls over the fisheries were encouraging more fishermen to take risks as they attempted to maintain their livelihoods.

While the study has implications for the design of safety measures it is also of interest to those health psychologists interested in how individuals reconstruct events as narrative, how they link events together into a storyline. When the opportunity arose in the interviews the fishermen eagerly recounted tales. It is important to emphasize their tales are not objective summaries of past events but stories told to justify the teller's viewpoint and to evoke sympathy from the listener. Some of the fishermen were aware themselves of the influence of this perspective taking on story construction.

The accounts begin with a reaffirmation of the positive aspects of fishing as an occupation. In doing so the fisherman silently contrasts his lifestyle (that of a professional) with that of the urban dweller (only a worker). His life is one of challenge and independence rather than one of routine and dependence. In their tales of accidents the fishermen often gave complicated explanatory accounts. Thus the fishermen were able both to accept responsibility but simultaneously attribute it to working conditions.

In developing prevention strategies it is important to address these issues. One method is to develop a narrative-based safety intervention [Cole 1997]. This would involve the development of a variety of narrative exercises, e.g. drama, which would provide fishermen with the opportunity to discuss a range of scenarios and the opportunities to take preventive actions. This form of intervention is more action-oriented rather than didactic. Its aim would be to actively involve the fishermen in the development of safety measures rather than imposing a safety framework.

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# HEALTH AND LIFESTYLE SURVEY OF SCOTTISH FISHERMEN

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## INTRODUCTION

Scottish fishermen have received very negative press coverage over the last decade or so. The media has suggested that the Scottish fishing industry is characterized by a chronic drug problem and that fishermen's health in general is poor. In recent years there have been a number of high profile fatalities at sea and it has been suggested that these incidents are the result of a culture of poor health and poor safety in the industry.

The industry itself has been concerned by the speculation about fishermen's health and safety practice. However, the industry was unable to deny or confirm any of these allegations, with any certainty, as very little research has been conducted into Scottish fishermen's health, lifestyle and affect on safety. In order to discover what the health and lifestyle problems facing fishermen are, the industry set up a committee known as FISH (Fishing Industry Safety and Health) with the aim of examining and addressing any health problems affecting fishermen.

A literature search showed that there had been very little previous research done on Scottish fishermen. What little research had been done showed that there might be cause for concern regarding alcohol consumption. A study conducted into the "*Incidence of treated alcoholism in North – East Scotland, Orkney and Shetland fishermen*" [Rix et al 1982] suggested there were high rates of alcoholism in Scottish fishermen.

A study was designed to gain data on a range of health and lifestyle issues. The study is ongoing, results are still being finalized. The findings presented in this paper are taken from our preliminary analysis.

## **METHODS**

The Health and Lifestyle Survey was developed through extensive consultation with fishermen, industry representatives, an occupational and environmental health doctor, a health promotions specialist in health in the workplace and staff at Banff and Buchan College, Department of Nautical and Maritime studies. The survey was designed to cover a wide range of health issues such as diet, smoking, alcohol consumption, mental health, use of prescribed and illicit drugs, injuries at sea, and accidents at sea. It also covered age, type of boat, occupation, how many boats worked on during career, and which region of Scotland the respondent was from, to see if these factors influenced health.

The questionnaire was piloted in 18 fishermen attending Banff and Buchan College to undertake their class 1 and class 2 certificates (skipper and mates certificates). The questionnaire was handed out to the fishermen and completed under classroom conditions. Feedback was then obtained to check on the ease of completion, appropriateness of questions, understanding of questions, and time to complete the questionnaire.

Following this, some minor changes were made to the wording of a few questions, then another postal pilot was undertaken. This was to simulate the real conditions of using the questionnaire by post and testing the response rate. The pilot was quite successful and fishermen had no problems filling out the questionnaire. We achieved a response rate of 58 percent.

Identifying the sample for the main survey proved problematic. The only comprehensive list of fishermen that exists was in the form of a tax deduction book held by the tax office. It was estimated this book contained contact addresses for over four thousand fishermen. (The tax deduction scheme was set up by fishermen themselves to make it easier for them to pay their taxes). However, for confidentiality reasons it was not possible to obtain access to this list. Ideally, the research team wanted to be able to define and identify the whole population of fishermen so that a sample could be randomly identified to receive the questionnaire. However, there was no mechanism to do this. As a compromise the research team used fish selling offices as agents for obtaining the names and addresses of fishermen. Fish selling offices act as agents for skippers, selling their catch and calculating wages for the crew. In total we received 1400 names from the fish selling offices. We also obtained 750 names from the Scottish Fishermen's Federation Hand Book, which lists

the names and addresses of skippers who are members. This gave us a total of 2011 names after duplicates had been removed.

A questionnaire, explanatory covering letter and reply paid envelope were posted to 2011 fishermen. Two reminders were sent and the data was entered onto a statistical database for analysis. The final response rate was 57 percent (n=1150). The following results are from our preliminary analysis, final results are still being compiled and will be available in 2001.

Table 1 shows the factors that Scottish fishermen perceived as being the main factors that affected their health. Lack of sleep, lack of exercise and financial stress were the three factors that fishermen saw as having the most impact on their health. The cold and damp working conditions and heavy smoking at

**Table 1:** Fishermen's perceptions of factors affecting their personal health

Variable	Affects health		Does not affect health		Not sure		Missing	
	No.	%	No.	%	No.	%	No.	%
Lack of sleep/fatigue	707	61.5	327	28.4	45	3.9	69	6.0
Lack of exercise	631	54.8	370	32.2	64	5.6	82	7.1
Financial stress	612	53.2	409	35.6	62	5.4	56	4.9
Cold/damp working and deck conditions	566	49.9	466	40.5	45	3.9	71	6.2
Heavy smoking at sea	531	46.2	423	36.8	58	5.0	135	11.7
Stress/worry about bad weather	509	44.2	525	45.7	44	3.8	71	6.2
Poor diet	504	43.8	486	42.3	50	4.3	110	9.6

sea as well as worry about bad weather and a poor diet were also areas that are clearly of concern to Scottish fishermen.

Bad weather, lack of sleep and the poor condition of boat were the three factors that were rated highest as factors affecting safety. The health condition of crew and of themselves and use of alcohol and drugs at sea were other areas that fishermen perceived as affecting their safety. (See Table 2.)

Back injuries were the most common type of injury sustained at sea. Leg or arm injuries, cuts requiring stitches, other hand injuries and head injuries were also fairly common. Only 25 percent of fishermen stated that they had

**Table 2:** Fishermen's perceptions of factors affecting their personal safety at sea

Variable	Affects safety		Does not affect safety		Does not apply to my boat		Missing	
	No.	%	No.	%	No.	%	No.	%
Bad Weather	1016	78.6	67	5.8	33	2.9	26	2.3
Lack of sleep/fatigue	701	61.1	180	15.7	192	16.8	55	4.8
Poor condition of boat	438	37.9	145	12.7	495	43.2	58	4.1
Health condition of crew	246	20.6	417	36.4	418	36.5	59	5.1
Your own personal health	201	17.5	494	43.0	387	33.7	61	5.2
Use of alcohol by crew	166	14.5	58	5.1	850	74.2	57	5.0
Use of illegal drugs by crew	147	12.9	33	2.9	895	78.1	56	4.9



never been injured at work. (See Table 3.) Eighty-two percent of fishermen who smoked indicated that they would like to give up smoking. Only eight percent indicated that they would not like to give up with a further ten percent being unsure. Thirty-eight percent of respondents smoked. (See Figures 1 and 2.)

**Table 3:** Incidence of injuries at sea

<b>Variables</b>	<b>Frequency</b>	<b>Percent</b>
Back injury	366	31.9
Leg or arm injury	249	21.7
Cuts requiring stitches	247	21.6
Other hand injury	223	19.5
Head injury	179	15.6
Sunburn	47	4.1
Chemical burns	32	2.8
Loss of finger	30	2.6
Rib injury	17	1.5
Cuts and bruises	11	1
Hernia	10	0.9
Burns	9	0.9
Eye	9	0.8
Never been injured at work	291	25.4
Other	67	5.8

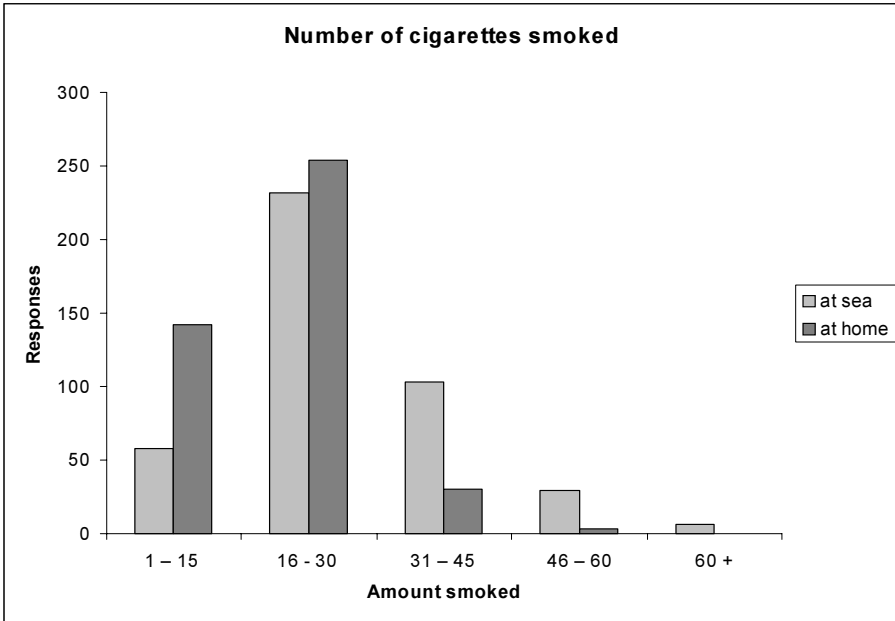


Figure 1: Number of cigarettes smoked at home and at sea

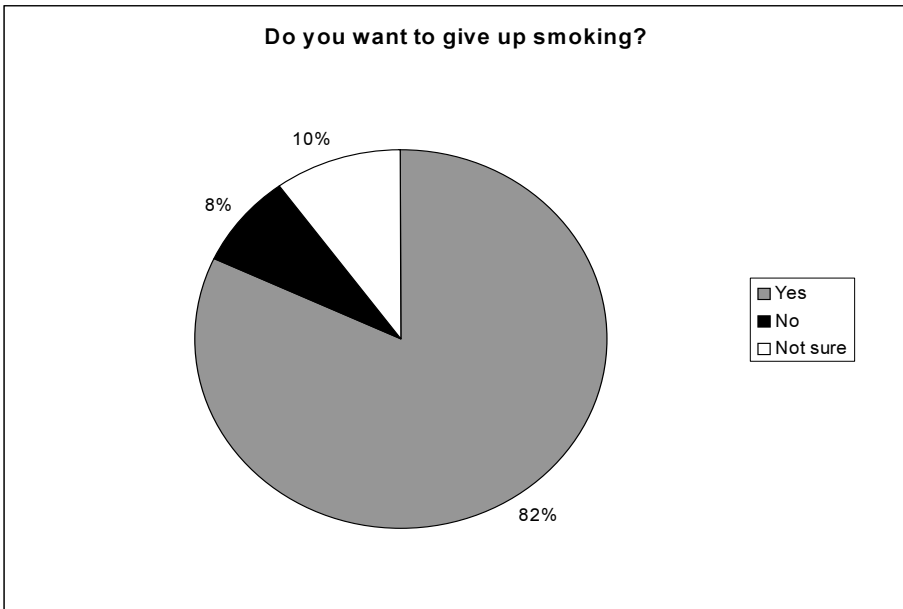


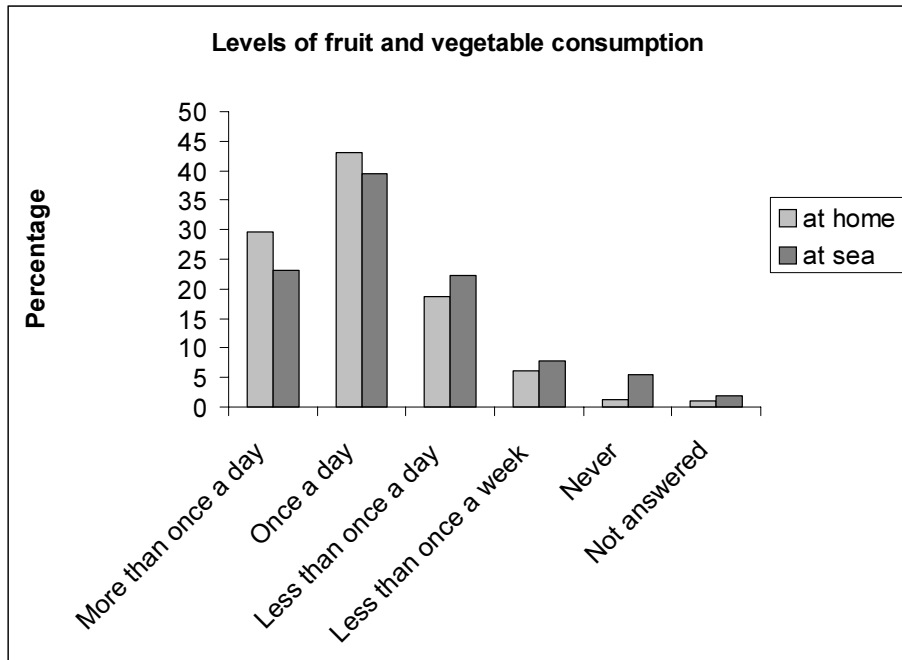
Figure 2: Fishermen's attitudes to giving up smoking

Thirty percent of fishermen ate fruit and vegetables at home more than once a day and 43 percent ate fruit and vegetables once a day. In total, 73 percent of fishermen ate fruit and vegetables at least once a day or more when at home. Only one percent said they never ate fruit and vegetables at home. Twenty-three percent of fishermen ate fruit and vegetables at sea more than once a day and 40 percent ate fruit and vegetables once a day. In total, 63 percent of fishermen ate fruit and vegetables at sea more than once a day. Six percent of fishermen ate no fruit and vegetables when at sea. (See Figure 3.)

## DISCUSSION

Scottish fishermen perceived lack of sleep/fatigue as being the main factor affecting their health. Many commented that their irregular sleep patterns had a detrimental impact on their health.

Lack of exercise and financial stress were additional factors that rated highly. Respondents clearly find it difficult to take regular exercise at sea. The confined space of the boat and the long working hours make it difficult to find time and



**Figure 3:** Amount of fruit and vegetables eaten by Scottish fishermen

space to exercise. Many legislative changes are viewed as making it harder for fishermen to make a living and are perceived by many as causing stress and anxiety about money. An additional effect of financial pressure is that many boats have to spend longer times at sea to ensure they catch their entire quota. Respondents saw longer trips to sea as being detrimental to health. Smoking, diet, stress, and worry about bad weather and cold damp working and deck conditions were other areas of concern to fishermen.

Bad weather was the factor that fishermen perceived as most affecting their safety at sea. As explained above, fishermen feel they are forced to work in worse weather conditions due to financial pressures. Lack of sleep again was a factor that rated highly. Thirty-nine percent of fishermen thought that the poor condition of their boat was a factor that affected their safety at sea. Personal health, the health of the other crew, and use of drugs and alcohol at sea were the other main areas of concern to fishermen.

Back injuries were by far the most common injury sustained by fishermen. This can probably be attributed to the amount of heavy lifting and bending that fishermen are exposed to in their daily work. Leg or arm injury, cuts requiring stitches, other hand injuries, and head injuries were all common injuries sustained by Scottish fishermen.

Thirty-eight percent of fishermen smoked and fishermen tend to smoke more at sea than they do at home. The smoking rate is considerably higher than the Grampian region average of 29 percent for male smokers. (Grampian region is the area of Scotland where the vast majority of fishermen are based.) It is encouraging however, to find that 83 percent of fishermen that smoked stated that they would like to quit. (See Figure 2.) The effects of passive smoking are an issue requiring consideration. This should be an area of major concern to the industry. There are no designated smoking areas on the majority of boats and some nonsmoking fishermen are likely to be exposed to high levels of passive smoking.

Questionnaire results suggest that fishermen are eating fruit more at fairly regular intervals. However, evidence from other areas of the study, especially the health diary program, suggest that fishermen are consuming vegetables regularly but are also eating lots of fried food and unhealthy snacks.

## **CONCLUSION/FUTURE DEVELOPMENTS**

The results of the questionnaire show that there is room for improving Scottish fishermen's health. Although the final results are not yet available, the preliminary findings have been presented to the FISH committee. FISH has recognized that problems exist and is keen to devise strategies to try and improve fishermen's health. In 2001, FISH hopes to run a series of workshops and seminars aimed at improving fishermen's health. The results of the health and lifestyle survey will help form the basis of material for these workshops and seminars. It is also planned to hold a number of health promotion initiatives aimed at fishermen.

## **ACKNOWLEDGEMENTS**

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