



Occupational injuries and health problems in the Egyptian Mediterranean fisheries

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ABSTRACT

Marine fishing is one of the most dangerous occupations. So far, no studies addressing occupational safety and health in the Egyptian fisheries have been conducted. The objective of this study is to explore and identify the types and causes of, as well as some factors associated with, occupational accidents and illnesses in the Egyptian marine fisheries. A sample of 686 fishermen in El-Maaddiya fishing port were interviewed for collecting relevant data. This paper presents the types of injuries mentioned by the interviewed fishermen and their potential causes in terms of accident type and involved agency/agency part. Also, major health problems and potential causes are presented. Furthermore, a logistic regression analysis was performed to study the significance of the association of some factors, such as age, experience, education and fishing gear with the occurrence of injuries and illnesses. The results of this study show that the Egyptian fishing industry involve many hazardous work conditions and practices that result in high morbidity and mortality rates, and high injury rates. The study recommends further research on suitable measures for the management of this problem.

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1. Introduction

Sea fishing is one of the most dangerous and hardest occupations. Occupational injuries are more frequent than in any other profession (Chauvin and Le Bouar, 2007). The International Labour Organization (ILO) and Food and Agriculture Organization (FAO) estimate that 7% of all worker fatalities occur in the fishing industry, despite accounting for less than one percent of the worldwide workforce (Antao et al., 2008). The ILO's Occupational Safety and Health Branch estimates that fishing has a worldwide fatality rate of 80 per 100,000 workers or approximately 24,000 deaths per year, and estimates that there are 24 million non-fatal accidents in the sector annually (ILO, 1999). From developing countries, much higher figures are cited. For example, it has been estimated that fatality rates in Sri Lanka's offshore fisheries are ten times higher than in Norway; a study on fatality rates in canoe fishing in Guinea in 1991–1994 indicated a rate of 500 per 100,000; in a number of other countries along the West African coast, the artisanal canoe fatality rates appear to be in the range of 300–1000 per 100,000 fishermen; and recent figures from South Africa report 585 fatalities per 100,000 fishermen (Smith, 2003).

Egypt is an important fish producer in both the Mediterranean and the Red Sea regions. It is ranked forty-second among the principal fish producing countries in the 2007 FAO Yearbook (FAO, 2009). According to FAO statistics (http://www.fao.org/fishery/countrysector/FI-CP_EG/en) in 2001, the Egyptian marine

registered fishing fleet operating in Mediterranean and Red Seas fishing grounds consisted of 6388 vessels, of which 3954 were motorized and the others under sail. The sailing fleet took 21% of total landing. Most of the motorized fleet (62%) was small wooden craft of less than 10 m in length and powered by inboard or outboard engines of less than 100 hp. Only 3% were large steel vessel with engines of more than 500 hp. The fishing fleet in 2001 was composed of 1215 trawlers, 1648 boats using long line and hooks, 632 using trammel and gill nets and 321 purse seiners, in addition to about 128 trawlers working outside Egyptian territorial waters, around the Gulf of Aden. The average crew of a trawler is 6–8, with 17–23 on a purse seiner, about 4–7 in gill and trammel, while other boats operate with a crew of 2 or 3. About 65,000 were employed in the primary fishing sector, of which about 27,550 were involved in marine fishing. However, the informal employment in fishing industry may considerably exceed these numbers.

Political and economic decision-makers are becoming increasingly aware of the fundamental economic role that fisheries and related activities play in Egypt. Therefore, the national plans included many issues addressing efforts to develop this industry for increasing the annual fish production. However, issues like occupational safety and health of fishermen have not yet been sufficiently addressed in these plans, despite being one of the most hazardous occupations. The reason for this is lack of awareness about occupational safety and health issues in this occupation. To the best of the author's knowledge, no studies have been conducted on the occupational safety and health in the Egyptian fisheries. Furthermore, no records are kept for injuries and illnesses in the fishing sector. Therefore, the objective of this study is to explore and identify the types and causes of, as well as some

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factors associated with, occupational accidents and illnesses in the Egyptian marine fisheries.

2. Methodology

2.1. Study location

The study was performed in one of the most important developed fishing ports in Egypt: El-Maaddiya, which is located in Abu Qir Bay. This port was selected for the study because it receives fishing vessels from various fisheries centers in the Egyptian Mediterranean coast, including El-Maaddiya, Abu Qir, Edku, Rasheed, and Borge Al-Borrollus. The study was conducted during the period July–September 2008.

2.2. Data collection

Since there are no available statistics or records on occupational injuries and illnesses in the Egyptian fisheries sector, the data were collected through interviewing the fishermen and filling the study questionnaire. It was expected that most of the fishermen are not or poorly educated. Thus, to avoid any discrepancy and misunderstanding of the questions and to obtain trustful results, a well-trained team, including the author, interviewed the participant fishermen rather than distributing the questionnaire to be filled by the fishermen themselves.

2.3. Design of the questionnaire

The questionnaire was divided into three sections. The first section included information about age, education, current fishing type, years of experience, and employment history of the interviewed fisherman. The second section was designed to collect data about the types of injury that the interviewed fisherman has been subjected to during the last few years (up to 3 years), and the causes of these injuries. The collected data were limited to the last few years to eliminate the effect of some old techniques previously applied in fishing gears while currently not in use. Furthermore, limiting data to recent years reduces uncertainty when studying the association of age and years of experience with occurrence of injuries. The third section of the questionnaire was designed to collect information about health problems that the interviewed crew suffers from as related to his work. The emphasis was primarily on hearing problems, vision problems and musculoskeletal disorders, as well as their potential causes, since they are common problems among marine fishermen. Then, a general question about other types of health problems was included.

2.4. Statistical analysis

The data were processed and analyzed using MINITAB version 15. The association of some important variables, such as age, years of experience, education and fishing method with occurrence of injuries and illnesses was tested by a logistic regression analysis. Age, years of experience, and education (given values between 0 for illiterate and 6 for university-graduated) were treated as continuous variables, whereas fishing method was treated as categorical variable. The results were presented as odds ratio (OR), 95% confidence interval (CI) and *P*-value of the regression coefficient. In all cases a significance level of 0.05 was used.

3. Results

The relevant demographic and occupational characteristics of the sample (*N* = 686) as related to age, years of experience, education

and fishing method (fishing gear) are presented in Table 1. More than three-quarters (76%) were aged 20–49, whereas only 6.3% were aged below 20. About 13.7% had less than 10 years of experience, 47.5% were illiterate and the 52.5% had education level ranging from read and write to university. Regarding fishing gear, 64.1% of the fishermen were working in purse seining vessels, 17.1% in trawling vessels and 17.9% in gill and trammel netting. Only 0.9% of the interviewed persons were working in other methods, such as dredging and lining. The high percentage of purse seining crews came from the fact that they constitute the majority of marine fishermen in Egypt. The average crew of a purse seiner in Egypt is 17–23 and of a trawler is 6–8, while for gill and trammel netting the average is 4–7.

3.1. Injury types and causes

In this study injuries were classified into six types: bruises, wounds and abscesses, bone fractures, amputations, burns, and other. Fig. 1 shows injury types, accident types and the associated agency types as practiced by the interviewed fishermen. Furthermore, Table 1 presents detailed analysis and correlation of these factors. About 65.3% (95% CI: 61.6–68.9%) claimed that they were subjected to bruises at least once during the last few years that resulted in absenteeism. Many accident types were associated with this type of injury. For example, 100% of those subjected to bruises said that the cause was falling to surface or to below at least once, 14.7% reported occurrence of struck-by/against accidents, and 5.1% reported contact-by/with accidents. Studying the physical or mechanical agency associated with the mentioned injuries, 98.7% of those subjected to bruises stated that a slippery or unstable surface of the vessel was the primary cause of the accident at least once. Also, 8.7% reported that they were subjected to bruises during events of boat sinking. Machinery (machine and winch) was involved in injuring 7%, whereas 6% were injured by other agencies.

It was reported by 56.6% (95% CI: 52.8–60.3%) of the interviewed fishermen that they had been subjected to wounds and abscesses leading to absenteeism at least once during the same period (Table 2). The majority of them (83.8%) described accidents of the type contact-by/with, followed by caught-in/on/between (30.9%), struck-by/against (26.3%) and fall-to-surface/below (18.8%). The most common agencies causing wounds and abscesses mentioned by them were ropes/ wires/sheaves/rings/swivels/net (60.8% of those subjected to wound and abscesses), fish and fish boxes (36.1%), machine/winch (42.2%), and slippery or unstable surface (12.4%).

Out of the interviewed fishermen, 120 crews (17.5%, 95% CI: 14.7–20.5%) were subjected to bone fracture (mainly broken arm or leg), and two of them were subjected twice. Most of the injuries (60.0%) were of the fall-to-surface/below type, mainly due to slippery or unstable surface (57.5%). Struck-by/against and caught-on/in/between were the accident types in 23.3% and 17.5%, respectively, of the injuries. Machine parts and winch were the agencies in 25.8% and 6.7% of the cases, respectively, whereas 4.2% of the injuries were in sinking events (Table 2).

Partial amputations (mainly in fingers, part of the hand, part of the foot or other part of the body) were reported by 27 (3.9%, 95% CI: 2.6–5.7%) of the fishermen who were able to return to work. The majority of these cases (85.2%) were of the caught-on/in/between type, followed by struck-by-against (14.8%). The associated agency was machine parts in 44.4% of the cases, winch in 25.9% and ropes/ wires/sheaves/rings/swivels/net in 18.5%.

Seventeen fishermen (2.5%, 95% CI: 1.5–3.9%) were subjected to burns in accidents of the contact-by/with type, due to contact with hot machine parts or direct flame from cooker (Table 2). Other types of injuries were mentioned by 16 fishermen (2.3%), most of which were due to fall-to-surface/below accidents.

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