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Occupational Health Research in the Commercial Fishing Industry

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The commercial fishing industry in the United States is one of the most hazardous work settings. Operations are characterized by hazardous machinery and equipment, strenuous labor, long work hours, harsh weather, and moving decks. Risk varies by vessel and types of gear. During 2000–2016, the fishing industry suffered a fatality rate of 115 deaths per 100,000 workers, compared with an average of 4 deaths per 100,000 workers among all U.S. workers.[1] During this same time, 755 commercial fishermen died, with nearly half of these fatalities (364, 48%) occurring after a vessel disaster, 30% (227) after a fall overboard, and 13% (97) from traumatic injuries sustained onboard.[1] The remaining 67 (9%) fatalities occurred either while diving or from injuries that occurred onshore or on the dock.[1] Risk factors and recommendations have been made to prevent these fatalities by fishery and by region of the country.[2–6]

Despite recent successes in reducing fatal injuries within the fishing industry, the need for occupational safety and health (OSH) research remains. This research provides the scientific evidence necessary to understand critical OSH issues, develop recommendations and practical solutions to mitigate risk, and support arguments for the inclusion of OSH measures within policy development.

Limited research has characterized non-fatal injury and illness in the commercial fishing and offshore seafood processing industries, such as chronic and infectious disease, fatigue, heat stress, and musculoskeletal injuries/illnesses. The “Occupational Health Research in the Commercial Fishing Industry” session, held in conjunction with the 2019 Western Agricultural Safety and Health Conference in Seattle WA, highlighted some of the recent research examining illness and non-fatal injuries.

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The first presentation explored the diverse weather environments that the fishing industry experiences across the country. Researchers trying to identify the best personal flotation devices (PFDs) for shrimp fishermen have had to understand the differences between perceived heat stress and physiological heat stress during simulated shrimp fishing tasks in hot and humid environments while wearing PFDs. These results suggest that perceptual heat strain can be used as an indicator of physiological heat strain at a moderate intensity under similar hot and humid environmental conditions.[7] Perceived and physiological heat strain may be a barrier to PFD use among fishermen working in the Gulf of Mexico. Further research is needed to evaluate the impact of lowering perceived heat strain on increased PFD use.

The second study presented evaluated chronic health risks before and during the fishing season in a sample of salmon gillnet fishermen in Alaska. Researchers found the prevalence of hearing loss, upper extremity disorders, and sleep apnea risk factors were higher than in the general population both before and during the fishing season. Occupational factors including exposure to noise, the upper extremity demands of gillnetting, and long working hours exacerbate these chronic health conditions. Health promotion programs targeted toward these conditions may present opportunities for improving total worker health. More information about this study can be found in the published article.[8]

Another presentation reviewed the published literature related to fatigue in the fishing industry. There is a general acceptance of long work hours and fatigue as an inevitable aspect of the job in the industry. Although fatigue contributes to fatalities, injuries, and illnesses, limited research has addressed shiftwork and fatigue in the fishing industry. To develop and evaluate practical interventions that reduce fatigue-related risks, the structural issues that affect workplace organization, cultural acceptance of long work hours, and fatigue must be addressed.

Reports of two other studies focused on Alaska. First, an epidemiologic study linking data from the Alaska Trauma Registry, Fishermen’s Fund, and US Coast Guard characterized non-fatal injury/illness patterns during 2012–2016. Fishermen’s Fund mainly captured claims submitted by small, independently-owned vessels in Southcentral and Southeast Alaska. In contrast, US Coast Guard reports mainly captured reports from large, company-owned vessels in Western Alaska. This study identified over 3,000 unique cases. Linking datasets provides the most comprehensive understanding of injury/illness to date. When stratified by severity and fleet, these results will inform prevention strategies. The second study, which was qualitative, focused on Alaska’s seafood processing industry. Researchers interviewed managers to gain their views on OSH programs. Participants reported managing programs for 68% of the industry’s workforce. Researchers identified five workplace factors that could be modified to improve OSH industry-wide: manager training and knowledge sharing; worker training, especially for workers with limited or no English-language skills; organizational aspects related to safety culture; application of ergonomic principles; and work hours.[9]

The final presentation discussed creative ways to engage the industry in research to better understand how OSH fits with workers’ and businesses’ competing priorities. Engaging

individual industry members in research allows us to understand high-risk tasks, safety perceptions, and opportunities. The Fishermen Led Injury Prevention Program (FLIPP) engaged fishermen and fishing community members in OSH research. This talk shared the approach and role of FLIPP community researchers (CRs). CRs were selected based on their knowledge and connection to the fishing industry. CRs organized focus groups and key informant interviews with Dungeness crab fishermen in ports along the West Coast. This engagement influenced the creation of a survey, which CRs then collected in person. Results of this survey provided injury information as well as safety perceptions. Good captain and crew, best marine practices, taking care of yourself (eating, staying healthy), and combatting fatigue were common responses to what they thought keeps them safe at sea. This engaged research approach gave the FLIPP team access to the industry, developed injury prevention ideas, and helped curb fear of injury prevention efforts. Findings from this project can be found in the published literature[10,11] and at the following website: FLIPPresources.org.

Conducting relevant research, which results in tailored and practical recommendations for interventions, will continue to improve OSH in the commercial fishing and seafood processing industries. Utilizing available data sources, taking opportunities to collect new data, and working closely with industry members allows researchers to be effective in their research projects, ultimately creating safer and healthier workplaces to benefit fishermen, processors, and their families.

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