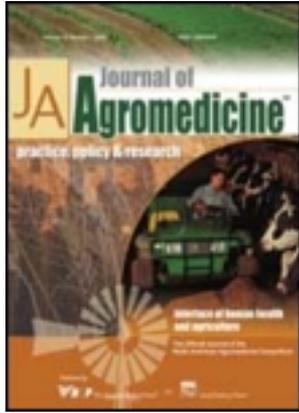


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Helping Gulf Shrimpers Adopt Safety Measures: Importance of Partnerships and Research to Practice

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ABSTRACT. Commercial fishing continues to be a dangerous line of work. There are many hazards and the work is complex, even on a small scale. Along the United States Gulf Coast, the make-up of the commercial fishing population is diverse, with many Vietnamese shrimpers. Cultural barriers can interfere with critical communication and with receptivity to necessary safety training. In the course of studying these factors, it became apparent that language was a significant barrier among Vietnamese shrimp fishermen learning sound signals and making Mayday calls, potentially contributing to adverse events. This article is a qualitative description of a pilot project in response to this observation and aimed at the development of a model simulating the bridge of a commercial fishing vessel (including horn blast and radio). The model is used to improve knowledge and skills of the fishermen by providing instruction in Vietnamese. As a Mayday call must be made in English, instructional aids are provided to assist fishermen in the exercise. This example of research to practice (r2p) demonstrates how research findings may enhance acquisition of safety knowledge and skills through development of these types of models as well sustainable instructional tools like the multi-lingual interactive CD described here. It further illustrates the importance of partnerships in the design and delivery of workplace safety training interventions. The model, instructional aids, and CD are timely as they coincide with new regulation which mandates certification of these competencies or skills.

KEYWORDS. Fishing vessels, navigation, training, safety, shrimp, Vietnamese, Mayday, simulation, research, interactive CD

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INTRODUCTION

The fishing trades are among the most dangerous jobs in the world. The Census of Fatal Occupational Injuries in 2009 for selected occupations demonstrated a fatal injury rate 58 times as high among fishers and related fishing workers (203.6) as the rate for all workers (3.5).¹

Human factors contributing to high occupational fatality include fatigue, inexperience, and failure to use safety practices and equipment. These factors, combined with hazards from machinery, the work environment (e.g., slippery and unstable work surfaces), and the elements at sea (e.g., extremes of temperature and weather), create significant risks for workers.²

In the United States, the Eighth Coast Guard District (Gulf Coast from Texas to the panhandle of Florida) rivals other coastal regions in the nation for the highest level of vessel losses and crew fatalities among commercial fishermen.³

BACKGROUND

Anthropologic work in the Mississippi shrimp industry of the Gulf Coast suggests a large proportion of Vietnamese shrimp fishermen.⁴ Shrimping is a complex process with many competing and distracting elements. The shrimping economy of the Gulf Coast is regulated by a combination of federal and state agencies and other groups. This occurs through control of safety requirements and times of fishing, price and imports, and other factors. Economic hazards are viewed by some to be worse than the dangers of the work and largely uncontrollable at the level of the fisherman. Economic determinants include political forces, the cost of diesel fuel, weather (hurricanes), and most recently, an environmental disaster (Deepwater Horizon oil spill).

Estimates of the percent of fishermen along the Gulf Coast who are Vietnamese are not well established. Recent work suggests that a large portion of the commercial fishing population along the Gulf Coast of Texas is made up of Asian and Hispanic workers.⁵ Over 80% of the shrimp fishermen in this study were Asian, predominantly Vietnamese, with nearly three quarters (73.1%) over the age of 40 years. The

authors further showed how language may prove to be a significant barrier to important safety training in this group.

Compared with other groups, the immigration pattern to the United States among Vietnamese is more recent, resulting in stronger cultural ties to their heritage.⁶ Furthermore, older Vietnamese refugees have more problems with language acculturation than their younger counterparts.⁷ The significant role that culture plays in the expression and experience of occupational health practices among Vietnamese shrimp fishermen has only recently received attention.⁶ It seems that hands-on training in this group by experienced fishermen, targeting captains, and conducted in the Vietnamese language is considered key to safety culture on the vessels. Training received from trusted and respected authority figures is important. Though a belief may exist that residents of the United States should be prepared to communicate in English, the importance of practical experience transmitted in Vietnamese to these individuals cannot be overemphasized. This form of training readily relates to the adoption and acquisition of safety messages and complex skills. This is particularly significant given that preparation of commercial fishermen for emergencies aboard fishing vessels can enhance crew survival.⁸

There are anecdotes implicating lack of navigation knowledge and skills related to signaling and radio communication by immigrant fishermen, and in particular, Vietnamese fishermen, in creating hazardous situations on the waterways. During community interactions with Vietnamese shrimp fishermen, it has come to light that several lack this knowledge and these skills despite many years of experience in the commercial fishing trades. This is compounded by a language barrier which has reduced receptivity to and effectiveness of training in English as well as created a reluctance to communicate, particularly by radio. A lack of confidence and perhaps a sense of embarrassment may preempt such communication when it is critical. Even in the setting of an emergency worthy of a Mayday call, cultural barriers including the language gap may create reluctance in making the call (personal communication). Poor outcomes from such emergencies have been

FIGURE 1. A “near miss” situation involving a shrimp boat which could result from failure to properly signal or communicate ship-to-ship (*Courtesy of SW Ag Center photo library*) (color figure available online).



the result of failure to effectively perform a Mayday call.

A ports and waterways safety assessment report for the Houston/Galveston area prepared by the U.S. Coast Guard (USCG) in July of 2009, identified language barriers, radio skills, and operational knowledge as potential quality and risk concerns for commercial fishing vessels in this region.⁹ There have been other anecdotal reports of navigational incidents and “near misses” resulting from failure to properly signal or communicate ship-to-ship via VHF radios (see Figure 1).

METHODS

Recognizing these issues early on, the Southwest Center for Agricultural Health, Injury Prevention, and Education (SW Ag Center), in collaboration with the USCG Marine Safety Unit, undertook to add a module to safety training for Vietnamese shrimp fishermen which emphasizes navigation knowledge and skills pertaining to items such as horn or sound signaling and radio communication. The effort began late in 2004 by using a dockside, squared away shrimp vessel for this purpose. Scenarios which the captain might face were developed in advance and presented in the classroom (see Figure 2). A skilled mariner would then instruct a small group of fishermen in Vietnamese on the vessel bridge, using video footage to illustrate approaching vessels on a laptop computer. The trainees would practice the various skills described above (see Figure 3).

Soon after, an effort was made to incorporate additional elements of rehearsal and simulation.

FIGURE 2. Discussing scenarios in the classroom in Vietnamese (*Courtesy of SW Ag Center photo library*) (color figure available online).



Two key skills identified by the USCG for training are sound signaling (with the vessel’s horn) and executing a Mayday call. A model was built by one of the project partners (Gallardo) replicating a vessel’s steering wheel, speed control, horn blast, and radio, in order to simulate the bridge of a fishing vessel. Professional video/audio footage of approaching freighters was produced. While projecting this footage onto a screen, vessel captains are instructed by an experienced mariner in Vietnamese how to listen to and signal approaching vessels with the horn. Tip cards, with English and Vietnamese instructions, guide sound signaling as well as practice of the Mayday call using the radio. However, practice and proficiency of the Mayday call are conducted in English and the importance of making the call with its essential elements in English is emphasized. The intent

of this “quasi-simulation” and rehearsal is to achieve a more realistic training experience (see Figures 4 and 5).

RESULTS

Commercial fishermen have participated in a larger study to examine factors influencing

FIGURE 3. Practicing sound signaling and communication skills dockside on the bridge of a squared away shrimp vessel (*Courtesy of SW Ag Center photo library*) (color figure available online).



FIGURE 4. The navigation “simulation” unit and professional video demonstrating meeting a freighter. A USCG Commercial Fishing Vessel Safety member carries out the exercise while instruction is delivered to the fishermen in Vietnamese by an experienced mariner (*Courtesy of SW Ag Center photo library*) (color figure available online).



occupational safety in this group. Training such as that described here has been offered as an enticement to participate in the larger research project. Promotion of safety training in conjunction with research project activities occurred at multiple port locations at or near Houston/Galveston, Abbeville, Louisiana, and New Orleans. Recruitment communication methods included flier announcements placed dockside and in nearby marine supply stores, radio public service announcements, and through “word-of-mouth” in local community venues. USCG marine safety personnel also notified many participants. Training sessions typically lasting approximately two to three hours were conducted at local community centers, churches, and agricultural extension offices, with occasional elements performed dockside.

This training has been well received by Vietnamese shrimp fishermen along the Texas and Louisiana Gulf Coast. The trainees received the sound signaling and Mayday call components of training aboard a squared away vessel as previously described, or using the vessel bridge model and video/audio footage. The instructor would first show and describe in Vietnamese each activity to a small group of fishermen (four to eight). In the small group setting, each participant would then practice and demonstrate proficiency in the competencies and skills associated with these tasks, being “checked off” by the instructor. This exercise takes 15 to 20 minutes. Between 35 and 100 fishermen received instruction during each training session. From 2004 to 2010, there were 535 fishermen who were trained (including repeats). In general, they offered highly favorable feedback during evaluations and after action reviews.

DISCUSSION

A number of vessel casualties with multiple fatalities in 2006 and 2007, has led to renewed Congressional interest culminating in legislation signed by President Obama on October 15, 2010: the Coast Guard Authorization Act of 2010 or P.L. 111–281.^{10,11} Under the existent rules originating with the Commercial Fishing Industry Vessel Safety Act (CFIVSA) of 1988

FIGURE 5. The laminated Mayday tip card in English and Vietnamese. It serves as a tool to help the fisherman communicate the Mayday call over the radio in English (color figure available online).

MAYDAY CALL FORMAT
Dịch Từ Tiếng Anh

Must use channel 16 and speak English when making Mayday Calls
Phải Dùng Tiếng Anh và Đài 16 Khi Gọi Cấp Cứu

Mayday..... Mayday..... Mayday.....
Trời Ối, Cứu Tôi VớiTrời Ối, Cứu Tôi VớiTrời Ối, Cứu Tôi Với

Fishing boat _____ Fishing boat _____
Đây là tàu đánh cá/tôm _____ Đây là tàu đánh cá / tôm _____

My Position: Lat _____ Long _____ My Position: Lat _____ Long _____
Vị Trí Của Tôi: Lat _____ Long _____ Vị Trí Của Tôi: Lat _____ Long _____

My emergency is _____ My emergency is _____
Tàu Tôi Bị _____ Tàu Tôi Bị _____

(Flooding, Fire, Man Overboard, Medical Emergency, Engines die)
(Nước Vô, Cháy, Người Té Xuống Biển, Có Người Bị Thương hay Bệnh Nặng, Chết Máy)

I have _____ persons on board.
Tàu Tôi Có _____ Người trên tàu.



FISHING VESSEL SAFETY PROJECT
Southwest Agricultural Center
UT Health Center at Tyler

- ❖ Điền vào chỗ trống mẫu này (form) bằng tiếng Anh trước khi gọi cấp cứu
- ❖ Bạn phải dùng tiếng Anh và đài 16 khi gọi cấp cứu (Mayday). Không bao giờ gọi bằng Cell phone. Tổng đài của 911 không phải là người đi biển!

Created by Captain Mang Vo, Houston, TX
For additional copies contact The Southwest Center for Agricultural Health, Injury Prevention and Education
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(46 CFR Part 28), fishermen were provided with an opportunity to bring their vessels into compliance and undergo a voluntary dockside examination for which they could receive a decal valid for up to two years.¹² New requirements for commercial fishing vessels pursuant to the Coast Guard Authorization Act of 2010 not only make dockside safety exams mandatory, but also expand training requirements for fishermen.^{10,11} Individuals in charge of vessels operating beyond three nautical miles are required to pass an approved training program and hold a valid certificate covering certain competencies to include, among other things, seamanship, collision prevention, navigation, stability, fire fighting/prevention, damage control, safety and survival, emergency medical care, and emergency drills. Individuals will be required to demonstrate ability to communicate in an emergency situation. Refresher training is required every five years. A publicly accessible

database listing individuals who have completed the training will be established.

The quasi-simulation model in this pilot project was well received, but it has quickly become apparent that a more sustainable method for reaching a wider audience with this training is desirable. To respond to these needs for sustainable and expanded training, the USCG Marine Safety Unit has collaborated with the NIOSH SW Ag Center to develop an instructional CD to train fishermen how to signal ship-to-ship and execute a Mayday call in English. With the assistance of a graphic designer, the CD also has interactive exercises to practice and test individual skills. Further, all components of the CD have been translated into Vietnamese and Spanish with introductory remarks by experienced mariners in each language. A group of key informants and fishermen has since reviewed the CD for content and subtle language considerations, followed by revisions, final review,

re-recording, and production in the near future. This effort coincides in a timely fashion with development of new rules to implement the training requirements of the 2010 Act noted above.

It is recognized that the longer term impact of this type of instruction has yet to be determined relative to retention of these skills or competencies or the reduction of adverse events, poor outcomes, or near misses associated with their suboptimal performance when required. None-the-less, this pilot project has shown how this component of safety training can be readily adopted by this group of commercial fishermen. Further, it may prove sustainable by dissemination of tools prepared in concert with the training. These include multi-lingual tip cards that can be easily displayed on the vessel bridge or near the radio for ready use when needed or in the event of an emergency. A multi-lingual interactive CD may assist the fisherman with access to initial or periodic instruction and compliance with new regulatory requirements for training. Within the scope of the larger research initiative which precipitated this pilot effort, there are plans to unveil this CD, disseminate it within the study population, and obtain feedback on attitudes/beliefs surrounding the training.

Research to practice (r2p) focuses on “the transfer and translation of knowledge, interventions, and technologies into highly effective prevention practices and products which are adopted into the workplace.”¹³ When embarking on community based research, it is necessary to develop a network of local stakeholders in order to secure support and ensure optimum participation. The SW Ag Center has utilized safety training as an important tool to engage the shrimp fishermen in prioritizing and disseminating safety interventions in an effort to enhance adoption of these measures aboard their vessels. The safety training is delivered in the primary language of the participants, and is designed to conform with earlier research findings and recommendations in terms of its delivery.⁶ The USCG Marine Safety Unit and other groups and partners have been instrumental in the success of this process. Community involvement and an r2p approach ensure that research results are diffused effectively to opinion leaders

who are instrumental to their adoption.¹⁴ In many respects, these partners represent trusted and respected leaders whose encouragement is influential for fishermen to participate. The Vietnamese shrimp fishermen perceive safety training as both important and necessary.

In summary, there is a gap in knowledge of Vietnamese commercial fishermen along the Gulf Coast surrounding the use of navigational communication tools. This is accompanied by a language barrier in the use of radio communication. This training module and anticipated production of an interactive CD serve as examples of r2p. The hands-on experience provided in Vietnamese by experienced instructors is responsive to findings of earlier work surrounding cultural influences on receptivity to safety training,^{5,6} as well as an identified concern of the USCG.⁹ Vietnamese shrimp fishermen are eager to learn under these training circumstances (see Figure 6). Acceptance of the training has been illustrated through widespread participation (training has reached 535 Gulf Coast Vietnamese fishermen between 2004 and 2010) and highly favorable feedback during evaluations and after action sessions. Similarly, an interactive CD produced in English, Vietnamese, and Spanish offers a sustainable approach for filling specific training

FIGURE 6. Training session aboard the deck of a squared away shrimp fishing vessel. The Vietnamese shrimp fishermen listen intently to a “situation” presented by an experienced mariner in Vietnamese (*Courtesy of SW Ag Center photo library*) (color figure available online).



gaps at a time when regulatory requirements are becoming increasingly prescriptive as to training content.

CONCLUSIONS

Through a long-standing collaboration between the NIOSH SW Ag Center and the USCG, a prototype has evolved for Vietnamese fishermen which helps to address a language barrier, is responsive to their training preferences, and which focuses on ship-to-ship communication skills, basic navigation rules of the road, and the performance of a properly executed Mayday call in English. This prototype has been described in the USCG journal dealing with safety and security at sea,¹⁵ and this qualitative description of a pilot project is now offered here. Ongoing meetings with multiple USCG stakeholders and the input of commercial fishermen has now permitted development of a more sustainable and enduring training tool such as an interactive CD. The CD which has been developed is responsive to prior research indicating the desire of Vietnamese commercial fishermen to have interactive training in their primary language taught by experienced mariners. It provides instruction in the aforementioned competencies using video animation and interactive scenarios to test skills. The latter tool also coincides with new regulation which mandates certification of competencies of this nature.

The project has demonstrated the importance of securing community/stakeholder input and considering cultural factors, including language, in the design and delivery of workplace safety training interventions. It has increased acceptance of the USCG as partners in safety, and recognition by individual fishermen of their responsibility to be safe at work.

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