Ocean Life: An International Journal of Maritime Occupation and Safety
2024, Vol. 2, No.1, 32 – 42 | ISSN Online: 3028-2039 | ISSN Print: 3028-2799
DOI: https://doi.org/10.62718/vmca.ol-ijmos.2.1.SC-1024-012

The Impact of Conducting Safety Drills Onboard Vessels on Emergency Response Preparedness of Filipino Seafarers

Article History:
Received: 16 October 2024
Accepted: 18 October 2024
Published: 20 December 2024

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Abstract

This study explored the effectiveness of mandatory safety drills on Filipino seafarers' emergency preparedness and response. International Maritime Organization's (IMO) first pillar, the Safety of Life at Sea (SOLAS), mandates these drills and their frequency which are believed to enhance crew competency when emergencies occur onboard the ship. However, the repetitive nature of some drills and the potential for human error during emergencies raise questions about their overall effectiveness. To investigate the Filipino seafarers' perspective on this topic, the researchers employed snowball sampling to survey fifty (50) seafarers from three (3) Manila shipping companies. The target population comprised of seafarers between twenty (20) and sixty (60) years old, with one (1) to thirty (30) years of experience at sea. Subsequently, the result of firefighting, enclosed space and rescue, and abandon ship drills have a positive impact on Filipino seafarers' safety skills. This shows that frequent drills absolutely improve and make seafarers more competent. Used mainly in emergencies, safety drills are highly lifesaving and saves others' lives by cultivating teamwork efficiency and collaboration. The result further showed that there is a significant relationship between the impact of conducting safety drills and the emergency response and preparedness of Filipino seafarers. The results brought potential benefits for shipping companies, maritime training institutions, maritime students, and policymakers.

Keywords: safety drills, emergency preparedness, Safety of Life at Sea (SOLAS), human error, Filipino seafarers

INTRODUCTION

The maritime industry is inherently risky, with shipboard emergencies posing significant threats to the safety of seafarers, passengers, and cargo. Over the years, the increasing frequency of ship accidents has underscored the critical need for effective emergency response training (Lee & Han, 2020). Emergency preparedness is particularly vital for seafarers due to the complex and isolated nature of their work environment, where swift and informed actions can mean the difference between disaster and survival.

Despite international maritime regulations, such as the Safety of Life at Sea (SOLAS) Convention, and the implementation of Standard Operating Procedures (SOPs), many vessels fail to meet these safety benchmarks due to insufficient drills, outdated training practices, and inadequate human resource policies (Putra et al., 2024).

Simulation-based training has been widely recognized as one of the most effective approaches for enhancing emergency response preparedness. Advanced 3D simulation facilities can replicate complex shipboard emergencies, allowing seafarers to practice and refine their skills in a controlled yet realistic environment (Baldauf et al., 2012; Felsenstein et al., 2013). Such training is essential to foster a culture of safety and to address key challenges affecting emergency readiness, including stress, fatigue, and poor safety practices (Handoko & Suhalis, 2021; Celik et al., 2020).

For Filipino seafarers, who comprise a significant portion of the global maritime workforce, emergency preparedness remains a pressing concern. Issues such as inadequate training, misplacement of safety equipment, and health-related risks, including cardiovascular diseases and trauma, further exacerbate their vulnerability during emergencies (Drylli Aikaterini et al., 2019; Oldenburg et al., 2014).

Given that the current five-year interval for medical refresher courses for nautical officers may be insufficient to maintain competency in critical emergency medical response (Oldenburg et al., 2014), there is a pressing need to re-evaluate and enhance safety drill practices.

The above observations has led the proponents to study the impact of conducting safety drills onboard vessels on the emergency response preparedness of Filipino seafarers. By examining the effectiveness of these drills in improving readiness and addressing the unique challenges faced by Filipino crew members, the research aims to provide insights into strengthening maritime safety and fostering a more robust safety culture within the seafaring industry.

LITERATURES

Importance of Safety Drills Onboard. Shipboard safety drills are vital for equipping crew members with the skills and knowledge needed to handle emergencies effectively. These drills familiarize the crew with life-saving equipment like fire extinguishers, lifeboats, and portable gas detectors. According to Raunek (2019), fire drills are especially significant as they prepare the crew for fire-related emergencies and promote teamwork to ensure no one is left behind during critical situations. The International Convention for the Safety of Life at Sea (SOLAS) emphasizes the need for regular fire and ship abandonment drills, enhancing the crew's preparedness and response capabilities.

Regulatory Framework for Maritime Safety. The SOLAS Consolidated Edition 2020 outlines strict guidelines for emergency training and drills. Chapter 3, Regulation 19 mandates monthly participation in fire and abandon ship drills and bi-monthly enclosed space entry and rescue exercises. Similarly, the International Safety Management (ISM) Code establishes global standards for safe ship operation and pollution prevention. National regulations, such as MARINA circular no. 2015-11 in the Philippines, require shipping companies to implement safety management systems (SMS) aligned with these international frameworks. These measures ensure uniformity in safety practices across the maritime industry.

Enhancing Crew Preparedness. Enhancing crew preparedness onboard ships is crucial for maritime safety and emergency response. Decision support systems can help crews make informed decisions during crises, particularly in flooding situations (Jasionowski, 2010). Safety training, compliant with Basic Safety Training standards, significantly improves crew technical skills, mental preparedness, and compliance with international regulations (Dhany et al., 2024). A hybrid approach using Fuzzy Dematel and Discrete Event Simulation can predict emergency preparedness levels, allowing shore-based managers to monitor fleet readiness continuously (Öztürk Taç & Celik, 2022). Regular onboard drills and training alarms, as mandated by SOLAS 74/78 Convention, are essential for improving crew response and refining muster lists and procedures (Szcześniak, 2013). These combined approaches of technological support, comprehensive training, simulation-based prediction, and practical drills contribute to creating a safer work environment in the maritime industry and enhancing overall ship management systems.

Local Maritime Safety Practices. In the Philippines, the Maritime Industry Authority (MARINA) enforces safety protocols through its Auditor's Manual and compliance requirements. Domestic vessels must adhere to mandatory ISM code provisions, including regular safety drills. Fontelera et al. (2017) emphasize the need for displaying emergency protocols prominently and training seafarers on fire prevention and equipment usage. Regular safety drills not only prepare Filipino seafarers for emergencies but also address issues like inadequate training and safety culture, as identified in local studies. These practices help reduce maritime incidents and protect lives at sea.

METHODOLOGY

Population, Sample Size, and Sampling Technique. The target respondents of this study were Filipino seafarers who experienced safety drills onboard a ship. Fifty (50) Filipino seafarers from three (3) shipping companies in Ermita, Manila were employed as respondents of the study. They were selected based on their firsthand experience with safety drills, including firefighting, abandon ship, and enclosed space rescue drills. The study also included alumni seafarers pursuing master's degrees who had onboard experiences, ensuring they could contribute valuable insights.

This study employed snowball sampling to recruit participants. Snowball sampling (Zach, 2020) starts with a small group of participants who then refer others meeting the study criteria. Following the said protocol, the researchers initially identified respondents along Kalaw Avenue, Ermita, Manila to answer the survey questionnaire then asked for referral of other Filipino seafarers with relevant onboard safety drill experience. This approach was chosen to overcome the difficulty of directly accessing the target population and ensured data collection from qualified respondents.

Research Instrument. Data were collected using a researcher-made survey questionnaire. The instrument was validated by maritime and research experts to ensure content validity. Reliability was assessed using Cronbach's alpha by a certified statistician. The instrument demonstrated "good to excellent" internal consistency (α = .957), indicating a strong correlation between the survey items. The subscales for specific emergency drills also showed high reliability: Firefighting (α = .850), Enclosed Space and Rescue (α = .871), and Abandon Ship (α = .890). For preparedness in emergencies after frequent safety drills, reliability scores were excellent (α = .974), with subscale scores as follows: Firefighting (α = .924), Enclosed Space and Rescue (α = .934), and Abandon Ship (α = .956). According to Bobbit (2024), Cronbach's alpha values closer to 1 indicate higher reliability.

The questionnaire consisted of close-ended questions divided into three parts. The first section collected demographic data, the second focused on the impact of safety drills on emergency response and preparedness, and the third assessed overall preparedness after participating in safety drills. A 5-point Likert scale was used for responses, ranging from Strongly Agree [5 points] to Strongly Disagree [1 point] (Bhandari & Nikolopoulou, 2020).

Data Gathering Procedure. The researchers visited three shipping companies along Kalaw Avenue, Ermita, Manila, to recruit participants. Health and safety regulations were followed during the visits. The researchers explained to the participants the study's objectives and asked to spare some time to complete the survey. Privacy and confidentiality of responses were emphasized.

Data collection occurred within two visits. During the first visit, ten (10) initial responses were collected and submitted to the statistician for reliability testing. The reliability test results confirmed "good to excellent" reliability, prompting full data collection. On the second visit, the researchers gathered fifty (50) responses for final analysis. The data were organized and submitted to a professional statistician and the Center for Research and Institutional Development (CRID) for further statistical treatment.

Statistical Treatment of Data. The researchers retrieved the responses from the Google Forms survey and statistically treated them using weighted mean and Pearson r correlation.

Weighted mean was calculated to evaluate the impact of safety drills on emergency response and preparedness assigns more weight to significant data points for a more accurate average.

Pearson r correlation was used to determine the relationship between safety drills and emergency preparedness. As Turney (2022)

explains, Pearson r measures the strength and direction of the relationship between two variables, with values ranging from -1 to 1. This analysis provided insights into the effectiveness of safety drills in enhancing emergency.

RESULTS

Participants' Perception on the Impact of Onboard Safety Drills - Enclosed Space and Rescue. Results in Table 1 have shown that the participants strongly agree on the impact of onboard safety drills on the improvement of emergency response and preparedness in terms of enclosed space and rescue (M= 4.46, SD= 0.49). They strongly agree that they feel confident in using a portable gas detector, multi-gas detector, or self-contained breathing apparatus (SCBA) correctly after participating in these drills (M= 4.46, SD= 0.61); the drills have sufficiently equipped them to carry out rescue operations with safety and efficiency (M= 4.50, SD= 0.58); the enclosed space and rescue drills have developed their situational awareness regarding the potential dangers and risks on board (M= 4.36, SD= 0.63); the drills have expanded their knowledge of the different gases on confined space and the appropriate safety protocol for each (M= 4.52, SD= 0.65); and, the drills have equipped them with the necessary skills to proficiently communicate and integrated with the rescue team outside the enclosed space in case of a trapped person (M= 4.48, SD= 0.61).

Table 1

Participants' Perception on the Impact of Onboard Safety Drills on the Improvement of the Emergency Response and Preparedness in Terms of Enclosed Space and Rescue (N= 50)

Enclosed Space and Rescue	M	SD	Interpretation
1. I feel confident in using (e.g., portable gas detector, multi-gas detector, SCBA etc.) correctly after participating in these drills.	4.46	0.61	Strongly Agree
2. The drills have sufficiently equipped me to carry out rescue operations with safety and efficiency.	4.50	0.58	Strongly Agree
3. The enclosed space and rescue drills have developed my situational awareness regarding the potential dangers and risks associated with confined spaces on board.	4.36	0.63	Strongly Agree
4. The drills have expanded my knowledge of the different gases on confined space and the appropriate safety protocol for each.	4.52	0.65	Strongly Agree
5. The drills have equipped me with the necessary skills to proficiently communicate and integrated with the rescue team outside the enclosed space in case of a trapped person.	4.48	0.61	Strongly Agree
Enclosed Space and Rescue	4.46	0.49	Strongly Agree

Most respondents strongly agree with the positive effect of enclosed space and rescue drills. This means that they absorb all the essential aspects of learning after drills to avoid fatalities inside the confines of the ship. It is an unfortunately common subject for enclosed space fatalities as they are also the first rescuer who loses their life, not because of safety equipment failure but rather the neglect to identify an enclosed space. However, most respondents strongly believe the drills have expanded their knowledge, especially when engaging with different gases in confined spaces. These drills have taught them plenty of lessons about the proper procedure of rescuing in enclosed spaces when there is an emergency onboard a ship. Therefore, in an emergency, Filipino seafarers must learn the dangers and how to act or rescue safely in enclosed space areas. Reports from the National Institute for Occupational Safety and Health (NIOSH), around sixty percent (60%) of deaths that take place in enclosed spaces are of people who are trying to rescue others. The Occupational Safety and Health Administration (OSHA) additionally stated that in cases where several fatalities happen throughout a rescue operation, most of the victims are individuals who were attempting to rescue others (Koester, 2018). That is why the respondents train on drills to be rigorously prepared and cultivate their situational awareness, especially of types of gases in confined spaces, such as methane, fumes, hydrogen sulfide, and other hazardous gases. Consequently, when neglected, it can harm their health and result in unconsciousness.

Participants' Perception on the Impact of Onboard Safety - Abandon Ship. In Table 2, results also revealed that the participants strongly agree on the impact of onboard safety drills on the improvement of the emergency response and preparedness in terms of abandon ship (M= 4.56, SD= 0.53). Participants have strongly agreed that the abandon-ship drills have expanded their knowledge regarding the proper procedures for safely evacuating the vessel (M= 4.56, SD= 0.61); that it enhanced their knowledge regarding the significance of following the approved muster list and embarkation procedures (M= 4.46, SD= 0.65);

that the drill has sufficiently prepared them to board and operate various type of lifeboats safely (M= 4.66, SD= 0.59); that it made them aware of the potential dangers and hazards associated with abandoning a vessel at sea (M= 4.54, SD= 0.65); and, it trained them to effectively communicate and cooperate diligently with my crew members when an abandon-ship declare (M= 4.56, SD= 0.64).

Table 2
Participants' Perception on the Impact of Onboard Safety Drills on the Improvement of the Emergency Response and Preparedness in Terms of Abandon Ship

Abandon Ship	M	SD	Interpretation
1. The abandon-ship drills have expanded my knowledge regarding the proper procedures for safely evacuating the vessel.	4.56	0.61	Strongly Agree
2. It has enhanced my knowledge regarding the significance of following the approved muster list and embarkation procedures (going to muster station).	4.46	0.65	Strongly Agree
3. The drill has sufficiently prepared me to board and operate various types of lifeboats safely.	4.66	0.59	Strongly Agree
4. It made me aware of the potential dangers and hazards associated with abandoning a vessel at sea (e.g., debris on sea, getting stuck, etc.).	4.54	0.65	Strongly Agree
5. It trained me to effectively communicate and cooperate diligently with my crew members when an abandon-ship declare.	4.56	0.64	Strongly Agree
Abandon Ship	4.56	0.53	Strongly Agree

In general, the respondents strongly agree with the abandon ship drill because, based on their experience, this drill was very effective for their emergency response. At that point, it will save many lives because the respondents were trained to handle the situation during critical situations. However, the operation of this lifesaving device, while lowered, revealed an issue that could place the crew members in dangerous circumstances during an emergency. Thus, the respondents gained fundamental knowledge of mustering and became acquainted with the proper procedure for boarding the lifeboat. On this time, the drills recall in their minds the use of personal lifesaving gears and apparatuses in case of emergency. Hence, the respondents' safety skills help them evacuate safely and help other crew members when their lives are in danger.

These drills aim to familiarize crew members with the proper procedures to be followed during a command to leave the vessel and the designated muster stations at which they should gather (Abandon Ship Protocols, 2024). Therefore, these drills are designed to enhance the level of preparedness and assure instantaneous and appropriate actions when a critical situation arises.

Respondents' Experience on Preparedness in Response to Emergencies After Participating in Frequent Onboard Safety Drills. This study also examined the level of preparedness in response to emergencies after participating in frequent onboard safety drills in terms of firefighting. The results in Table 3 reveal that the participants strongly agreed (M= 4.50, SD= 0.42) to all the indicators relative to preparedness on emergencies. They strongly agreed that they have been able to apply the firefighting techniques effectively learned from the firefighting drills (M= 4.48, SD= 0.54); maintain calmness, and make the appropriate decisions during actual fire emergencies (M= 4.40, SD= 0.67); coordinate and work effectively as part of a team during actual fire emergencies as practiced during the drills (M= 4.54, SD=0.54); follow proper survival techniques and locate fire exit safely (M= 4.48, SD= 0.58); and, respond effectively during actual fire emergencies onboard (M= 4.62, SD= 0.53).

Table 3
Participants' Preparedness in Response to Emergencies after Participating in Frequent Onboard Safety Drills in terms of Firefighting

Firefighting	M	SD	Interpretation
1. During a fire emergency on board, I have been able to apply the firefighting techniques effectively learned from the firefighting drills.	4.48	0.54	Strongly Agree
2. I have been able to maintain calmness and make the appropriate decisions during actual fire emergencies.	4.40	0.67	Strongly Agree
3. I have been able to coordinate and work effectively as part of a team during actual fire emergencies, as practiced during the drills.	4.54	0.54	Strongly Agree
4. The firefighting drills have enabled me to follow proper survival techniques and locate fire exit safely.	4.48	0.58	Strongly Agree
5. The overall impact of the frequent firefighting drills has significantly improved my ability to respond effectively during actual fire emergencies on board.	4.62	0.53	Strongly Agree
Firefighting	4.50	0.42	Strongly Agree

The result examined how often safety drills impact respondents' perceptions of readiness for onboard fire emergencies. The outcomes suggest that drills significantly affected the respondent's application safety skills during emergencies. After taking part in these drills, respondents expressed vital preparation in several essential areas (ranging from "agree" to

"strongly agree"). Then Filipino seafarers felt comfortable applying the firefighting skills they had acquired in the drills, remaining composed under pressure, cooperating well as a team, locating escapes, and handling a fire emergency efficiently. However, the procedure and frequency of the drills differ depending on the company and vessel. Despite that, regular safety drills significantly increase crewmembers' confidence in managing a fire onboard the ship.

Moreover, the respondents participated in regular firefighting drills while on board the ship, receiving comprehensive training on various firefighting techniques and procedures. The officers manage these drills to equip them with the necessary skills and knowledge to respond effectively in a fire emergency on board. Emma and Dafni (2021) found that their participants recommended that the Master and officers on board should possess advanced theoretical skills. This is because their responsibilities frequently involve developing and implementing processes and procedures that must adhere to the applicable regulations. Subsequently, when an actual or given scenario about a fire incident, the respondents found themselves in a critical situation where they had to put the firefighting training into practice. As a result, Filipino seafarers strongly agreed that the firefighting techniques they learned during those drills proved highly effective and significant in combating the fire emergency.

Participants' Preparedness in Response to Emergencies - Enclosed Space and Rescue. In addition, the results of this research show that the participants strongly agree (Table 4) on the level of response and preparedness to emergencies after participating in frequent onboard safety drills in terms of enclosed space and rescue (M= 4.48, SD= 0.55). They strongly agreed that they have developed confidence in their knowledge obtained on drills to identify and recognize the potential hazards of confined spaces onboard ship (M= 4.52, SD= 0.61); that the drills have equipped them with the proper knowledge and skills to safely enter and navigate in confined spaces (M= 4.38, SD= 0.64); and, that it has reminded them of the significance of the equipment like portable gas detector, multi-gas detector and SCBA when working in confined spaces (M= 4.50, SD= 0.61).

They also strongly agreed that the drills have sufficiently prepared them to respond effectively in case of an emergency involving confined spaces on board (M= 4.46, SD= 0.71) and, that the drills have significantly enhanced their overall preparedness to manage emergencies and problems that occur in confined areas on board (M= 4.52, SD= 0.65).

Table 4

Participants' Preparedness in Response to Emergencies after Participating in Frequent Onboard Safety Drills in terms of Enclosed Space and Rescue

Enclosed Space and Rescue	M	SD	Interpretation
1. I have developed confidence in my knowledge that I obtained on drills to identify and recognize the potential hazards confined spaces onboard ship.	4.52	0.61	Strongly Agree
2. Frequent enclosed space and rescue drills have equipped me with the proper knowledge and skills to safely enter and navigate in confined spaces.	4.38	0.64	Strongly Agree
3. This drill has reminded me of the following equipment portable gas detector, multi-gas detector, and SCBA when working in confined spaces.	4.50	0.61	Strongly Agree
4. Frequent enclosed space and rescue drills have sufficiently prepared me to respond effectively in case of an emergency involving confined spaces on board.	4.46	0.71	Strongly Agree
5. Participating in regular enclosed space and rescue drills has significantly enhanced my overall preparedness to manage emergencies and problems that occur in confined areas on board.	4.52	0.65	Strongly Agree
Enclosed Space and Rescue	4.48	0.55	Strongly Agree

The results from the respondents have reported the feeling of highly prepared and confident after participating in frequent enclosed space and rescue drills. This suggests that the drills effectively communicated the procedures, hazards, and skills needed for confined space emergencies. This indicates that seafarers become prepared and confident after participating in frequent drills in enclosed spaces. Then, the enclosed space and rescue drill is likely to give enough idea to seafarers identifying potential hazards in confined spaces onboard ships, especially when someone gets trapped or becomes unconscious inside the tanks. The high mean score proposes that participants felt conviction in recognizing these dangers.

Thus, drills give them actual scenarios when someone needs to be rescued inside the tanks. To enhance the authenticity of the drill, they

select a victim, particularly a dummy, who is very likely to be present in the specific confined area. In this particular instance, the individual in question is the Chief Officer. This enhances the scenario's reality and evaluates the emergency team's reaction since the Chief mate, who is typically in command at the scene, may require someone to act as a deputy. It is important to include the assignment of essential individuals as deputies on the muster list (Southham, 2020).

As a result, the respondents absolutely improved their knowledge of present hazards in enclosed spaces. They became acquainted with entering and navigating in enclosed spaces such as cargo tanks, ballast tanks, cofferdams, etc. At that point, the drills involved practicing safe entry procedures and maneuvering within confined spaces. The results indicate that participants felt equipped to handle these tasks. Afterward, the drills likely emphasized the importance of using equipment like gas detectors and breathing apparatus (SCBA) in confined spaces. The high score suggests that participants understood this equipment's critical role in safety. Hence, drills will likely be very effective in impacting assigned rescuers' emergency response. According to Southham (2020), the comprehensive enclosed space and rescue drill will enable to consolidate the numerous procedures previously practiced, including the utilization of SCBA, rescue methods, device assessment, emergency strategy verification, and emergency medical treatment.

Participants' Preparedness in Response to Emergencies - Abandon Ship. As reflected in Table 5, the results revealed that the participants strongly agreed on the level of response and preparedness for emergencies after participating in frequent onboard safety drills in terms of abandon ships (M= 4.55, SD= 0.54). The respondents strongly agreed that the drills have equipped them with the proper knowledge and skills to effectively use lifesaving appliances, such as life jackets and immersion suits in preparation of abandoning the ship (M= 4.60, SD= 0.64); that the participants understand the importance of following established embarkation procedures and boarding survival craft in an orderly manner (M = 4.58, SD= 0.61); and that they understood the need to remain vigilant and followed the emergency leadership team's instructions during frequent abandon ship drills (M= 4.52, SD= 0.61).

Table 5
Participants' Preparedness in Response to Emergencies after Participating in Frequent Onboard Safety Drills in Terms of Abandon Ship

Abandon Ship	M	SD	Interpretation
1. Frequent drills have equipped me with the proper knowledge and skills to effectively use lifesaving appliances, such as life jackets and immersion suits in the preparation of abandoning the ship.	4.60	0.64	Strongly Agree
2. I understand the importance of following established embarkation procedures and boarding survival craft in an orderly manner.	4.58	0.61	Strongly Agree
3. I understood the need to remain vigilant and followed the emergency leadership team's instructions during frequent abandoned ship drills.	4.52	0.61	Strongly Agree
4. The drills have equipped me with the necessary safety skills to handle an actual emergency circumstance of abandoning the ship while onboard the ship.	4.52	0.61	Strongly Agree
5. The frequent abandoned ship drills have increased my overall preparedness to handle situations requiring abandoning the vessel.	4.54	0.61	Strongly Agree
Abandon Ship	4.55	0.54	Strongly Agree

Moreover, they strongly agreed that the drills have equipped them with the necessary safety skills to handle an actual emergency circumstance of abandoning the ship while onboard the ship (M= 4.52, SD= 0.61) and have increased their overall preparedness to handle situations requiring abandoning the vessel (M= 4.54, SD= 0.61).

Most respondents strongly agree with frequent drills' impact on their emergency response and preparedness. Frequent and regular abandon ship drills are the most effective strategy for ensuring that mariners are well-acquainted with the working and operation of the lifesaving appliances (LSA) located aboard their vessels.

Relationship Between the Impact of Conducting Safety Drills and the Emergency Response and Preparedness of Filipino Seafarers. The results in Table 6 indicate that there are significant associations at 0.05 p-value. First, the impacts of conducting safety drills in terms of firefighting are significantly and positively correlated to the level of preparedness and response to emergencies in areas of: firefighting (r= .457, p= <.01), enclosed space and

rescue (r= .570, p= <.01), and abandon ship (r= .478, p= <.01). These suggest that the skills acquired from the training related to safety drills can predict the level of preparedness and response they have about various areas like firefighting, enclosed space and rescue, and abandon ship.

Table 6
Pearson Correlation (r) Analysis of the Relationship between the Impact of Conducting Safety Drills and the Emergency Response and Preparedness of Filipino Seafarers (N= 50)

	Impact of Conducting Safety Drills		
Preparedness in Response to Emergencies	Firefighting	Enclosed Space and Rescue	Abandon Ship
Firefighting	0.457** (p= .001)	.434** (p= .002)	.421** (p= .002)
Enclosed Space and Rescue	0.570** (p= .000)	.792** (p= .000)	.806** (p= .000)
Abandon Ship	.478** (p= .000)	.707** (p= .000)	.804** (p= .000)

*** Correlation is significant at the 0.01 level (2-tailed).*

Secondly, the results reveal that the skills acquired in the impacts of conducting safety drills about enclosed space and rescue are significantly and positively correlated to the level of preparedness and response to emergencies in areas of: firefighting (r= .434, p= <.01), enclosed space and rescue (r= .792, p= <.01), and abandon ship (r= .707, p= <.01), which indicate that the skills acquired from the training related to enclosed space and rescue safety drills can predict the level of preparedness and response they have about various areas like firefighting, enclosed space and rescue, and abandon ship.

Lastly, the statistical results also show that the skills acquired in the impacts of conducting safety drills about abandon ship are significantly and positively correlated to the level of preparedness and response to emergencies in areas of: firefighting (r= .421, p= <.01), enclosed space and rescue (r= .806, p= <.01), and abandon ship (r= .804, p= <.01). These mean that as their skills acquired from safety drills, their preparedness to emergencies such as firefighting, enclosed space and rescue, and abandon ship may also increase.

The tabulation results show strong positive correlations, which means that as the respondents' safety drill skills improved, their ability to be ready for and handle different emergencies also increases. It has strong positive correlations across several descriptive questions, showing a clear connection between the skills learned in safety drills and the respondent's preparedness for and ability to handle different emergencies. In particular, the skills crew members learned in firefighting drills were strongly and positively linked to how ready they were and how quickly they could respond in firefighting, rescue in confined spaces, and abandon ship emergencies.

Moreover, this tabulation shows how firefighting drills prepare Filipino seafarers in multiple ways. They improve their ability to fight fires and teach them essential safety skills that they can use in other emergency scenarios, especially using different types of firefighting equipment safely and effectively to put out fires. Teamwork, communication, and making efficient decisions under pressure are just some valuable skills and experiences that respondents learn from these drills.

In addition, the skills learned in enclosed space, rescue, and abandon ship drills enormously improved the participants' ability to be ready for and respond to all three types of emergencies. These results also show how the training and familiarization that come with different safety drills are linked. This shows how important it is to teach seafarers safety in a comprehensive and integrated approach.

In particular, the skills that participants learned in firefighting, limited space and rescue, and abandon ship drills were strongly linked to how ready and able they were to respond in all three emergencies. Wanga (2024) states, "Regular onboard safety drills are integral to every vessel's safe performance. Safety training helps crews be more prepared, work together better, and learn useful skills they can use in emergencies." This means that the thorough training these drills provide improves the seafarers' skills in their specific areas and makes them better prepared to handle various emergencies.

Furthermore, the null hypothesis is concluded to be untrue. Conducting drills onboard vessels significantly improves safety skills, specifically preparedness and emergency response. Because of these, the independent variable greatly affected the dependent variable, and the results are directly significant. Hence, the rejection of the null hypothesis provides strong evidence that conducting drills has a significant positive impact on enhancing the emergency response and preparedness of Filipino seafarers.

DISCUSSION

This study explored the critical role of safety drills in enhancing the emergency preparedness and response capabilities of Filipino seafarers. The study revealed that participants strongly agreed on the positive impact of firefighting, enclosed space and rescue, and abandon ship drills on their knowledge, skills, and confidence.

Primarily, firefighting drills were found to be instrumental in equipping seafarers with essential techniques to prevent and manage fire emergencies. These drills enhanced their understanding of fire safety measures, the operation of firefighting equipment, and the importance of teamwork during crises. Participants reported increased confidence and competence in handling fire-related incidents, emphasizing the need for regular practice to reinforce these skills.

Similarly, enclosed space and rescue drills emerged as a vital component in preparing seafarers for emergencies in confined spaces. These drills significantly improved the participants' ability to identify hazards, operate critical equipment like gas detectors and self-contained breathing apparatuses, and navigate confined spaces safely. The study also highlighted the importance of communication and collaboration during rescue operations, demonstrating that these drills not only improve individual preparedness but also foster a sense of teamwork and coordination among crew members.

Abandon ship drills were equally impactful, as they enhanced the participants' knowledge of evacuation procedures, the use of lifesaving appliances, and adherence to muster lists. These drills prepared seafarers to respond efficiently during abandonment scenarios, ensuring their safety and survival at sea. The participants acknowledged that such drills instilled a strong understanding of safety protocols and improved their readiness to handle emergencies requiring swift evacuation. The study further established a strong positive correlation between the frequency of safety drills and the preparedness of Filipino seafarers.

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