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Analysis of Knowledge and Attitude regarding First Aid and CPR among Myanmar Seafarers

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Abstract

Addressing a critical knowledge deficit within the maritime workforce, this study investigates the level of preparedness exhibited by Myanmar seafarers in regard to administering first aid and cardiopulmonary resuscitation (CPR). The research underscores the significance of customised training programmes for the maritime environment, as evidenced by the gender disparity and broad age distribution. Although the participants demonstrate noteworthy skills in burns care and CPR, they lack proficiency in specific areas such as managing haemorrhage, attending to unresponsive patients, and understanding the chain of survival. The study highlights the necessity of incorporating practical situations and a collaborative approach from various academic disciplines in order to enhance first aid training and ultimately enhance marine safety. In support of experiential learning in emergency response, the correlation study establishes a positive relationship between first aid knowledge and seafarer experience. Although the research conducted yielded valuable insights, a significant drawback was the lack of a skills assessment element; this underscores the critical need for future studies to incorporate objective measures. This study concludes by contributing to the collective comprehension of seafarers' proficiency in emergency procedures and acting as a catalyst for targeted interventions, policies, and best practises in the maritime industry. Despite the constraints, this research establishes a foundation for future research into maritime safety. It underscores the criticality of rectifying divergent levels of assurance in order to improve emergency medical readiness in the maritime domain as a whole.

Keywords: First Aid, CPR, Seafarer, Knowledge, Attitude, Myanmar

1. Introduction

In the marine sector, seafarers play a crucial role in maintaining the safe and efficient navigation of ships throughout the world's oceans and waterways. Their demanding profession exposes them to a variety of risks, including accidents and medical emergencies, in which timely and effective first aid and cardiopulmonary resuscitation (CPR) skills can make a significant impact in saving lives. It is indicated that while the number of ship casualties in 2021 was 57% lower than a decade prior, 3000 ship incidents occurred in the year according to

the Allianz global annual report 2022 (Cao et al., 2023). Despite the fact that various associations and organisations report accidents and incidents in maritime industry, incomplete or underreporting of data (Psarros et al., 2010) is still observed in the health-related space. In the context of medical emergency preparedness, research on the knowledge and attitudes of seafarers regarding first aid and cardiopulmonary resuscitation (CPR) remains limited, especially in the context of Myanmar's maritime workforce.

The maritime environment is typically challenging, with limited resources and time, especially in the event of a medical emergency; therefore, seafarers are required to have critical first aid skills. The onboard marine officers are required to undergo medical first aid training in order to respond to medical and health emergencies in accordance with the Maritime Administration Guidance (D'agostini, 2017). The maritime training providers are also regulated by the Myanmar Maritime Administration Department (DMA), which also governs the framework and structure of the first aid examination and certification (DMA, 2016).

Through its strategic location and rich maritime history, Myanmar relies heavily on a competent and committed marine crew for its contribution to its economy and international trade (D'agostini, 2017). Despite the critical significance of seafarers' ability to handle medical emergencies, few studies have examined their readiness and knowledge of first aid and CPR. Recognising the present state of knowledge and attitudes among Myanmar seafarers is essential for identifying potential knowledge gaps and developing targeted interventions to improve their capacity to respond effectively to medical emergencies at sea.

This study aims to address the current knowledge gaps by conducting an evaluation of Myanmar seafarers' knowledge and attitudes regarding first aid and CPR. By investigating this topic, it is intended to describe on the current state of preparedness among this essential group of maritime professionals and provide critical insights that can inform training programmes, policies, and best practises in the maritime industry.

2. Method

The study includes the seafarers working within the maritime industry in Yangon Myanmar. There are two OPITO (Offshore Petroleum Industry Training Organisation)-approved offshore and maritime training centres in Yangon, Myanmar, and the sample seafarer population was selected from one of these training centres.

2.1 Inclusion and exclusion criteria

Inclusion Criteria: the seafarers who are above 18 years of age and who have previously received first aid training. *Exclusion Criteria*: new seafarers who haven't received first aid training before or who are the new seafarer trainees.

2.2 Sample Size

Approximately 100 seafarer refresher trainees are expected to be trained in the training centre within three months. Sample size is calculated based on the sample size power calculator. 49 samples are needed to have a confidence level of 95% with ±5% of the margin of error.

2.3 Sampling Procedure

An email consent was obtained from the training centre manager to conduct the study whereas the random sampling method was utilised as the sampling procedure. The online questionnaire including the information of the study and online consent form were distributed to the randomly selected participants via the training centre manager.

2.3.2 Questionnaire and Data Collection

A Microsoft online form was used to collect demographic information, first aid and CPR knowledge, and attitudes. First aid and CPR questions was created using the American Heart Association's 2020 First Aid Guidelines (Singletary et al., 2020) as a guide. The questions on injury and trauma management, CPR, giving breaths, burns and choking are added in the questionnaire. The data was collected from August-October 2023.

2.3.3 Data Analysis

Data analysis was performed using JASP Version 0.17.3 for Windows (JASP Team, 2023). A cross sectional descriptive statistic and correlational analysis were generated for the seafarers' knowledge and attitude about first aid variables.

3. Results

The survey was completed by a total of 58 seafarer respondents from the training centres after following the application of data cleaning and exclusion criteria.

3.1 Demographics

The survey findings indicate a notable disparity in gender representation within the seafaring community in Myanmar, since all participants self-identified as male. The lack of female participants implies a predominantly male-dominated composition within the marine sector in Myanmar.

The survey reveals a heterogeneous population of people in terms of age, comprising sailors from various age groups. It is worth noting that the survey participants do not include those under the age of 20, with the bulk of respondents falling between the age range of 30 to 59. The age categories of 30-39 and 40-49 have the greatest levels of representation, accounting for 33% each.

The study aims to gather data on the experience levels of seafarers, with the objective of gaining valuable insights about their professional tenure. The vast majority of participants in the survey possess professional experience ranging from 1 to 15 years. The category with the biggest proportion of responders is the 1-5 years' category, which accounts for 43% of the total. This observation implies the presence of a considerable proportion of individuals who have just joined the marine industry. The distribution of the participant demographic is shown as per Table 1.

Table 1: The distribution of the participant demographics

Name	Categories	n	Percentage
Gender	Male	58	100
	Female	0	0
Age	<20	0	0
	20-29	14	24
	30-39	19	33
	40-49	19	33
	50-59	6	10
Years of Experience	1-5	25	43
	6-10	9	16
	11-15	13	22
	16-20	7	13
	21-25	4	6

3.2 First Aid and CPR Knowledge among the Seafarers

The examination of the outcomes from the evaluation of first aid knowledge provides a comprehensive comprehension of the participants' competence in fundamental skills related to emergency medical response. Significantly, the participants exhibited excellent proficiency in burns care, with 81% demonstrating expertise in

this domain. Additionally, all participants shown a comprehensive comprehension of CPR (100%), indicating a strong grasp of this vital subject matter.

Nevertheless, it was observed that there were areas of modest proficiency in the care of bleeding (60%), handling unresponsive casualties (64%), and understanding the chain of survival (60%). The research indicates that there may be gaps in knowledge about the first evaluation of casualties' breathing (53%) and the management of choking incidents (59%). These findings highlight the need for targeted training interventions to address these areas of concern. The study found that traumatic airway management and rescue breathing with a pocket mask yielded the outcomes, with success rates of 67% and 79% respectively. The detail distribution of the knowledge assessment findings is shown in Table 2.

Table 2: the distribution of the percentage of the participants achieving a pass in each first aid knowledge element.

First Aid Knowledge Element	Percentage of participants achieving a pass in each knowledge element
Bleeding Management	60
Burns Management	81
Traumatic Airway Management	67
Unresponsive Casualty Management	64
Initial Casualty Breathing Assessment	53
Rescue Breathing with Pocket Mask	79
Choking Management	59
CPR	100
Characteristics of CPR	74
Chain of Survival	60

The first aid knowledge questions were analysed, compiled and the correlation analysis was performed between total first aid knowledge scores and the years of seafarer experience. According to the analysis, the correlation to assess the total first aid knowledge score and the years of seafarer experience is highly, significantly positively related with a small effect size, r=0.580, 95% CI [0.729, 0.378], p=<0.001 as shown in Table 3 and Figure 1.

Table 3: The correlates of First Aid Knowledge Total Score and Years of Seafarer Experience

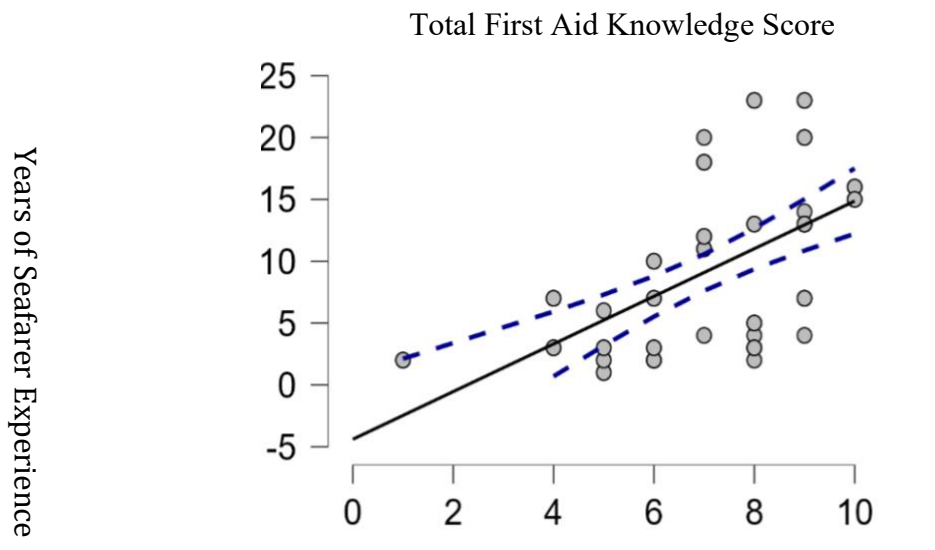| Variable		Years of Experience
First Aid Knowledge Total Score	N	58
	Pearson's r- Value	0.580
	Upper 95% CI	0.729
	Lower 95% CI	0.378
	p-value	<0.001

Total First Aid Knowledge Score

Figure 1: The Scatterplot correlates of first aid knowledge total scoring and the years of seafarer experience

3.3 Participants' Attitude towards the Confidence Level in First Aid and CPR Administration

The distribution of participant responses to the question "I am confident in my ability to administer first aid and CPR based on my current knowledge" is presented in Table 4. The responses were measured using a 5-point scale. The findings demonstrate that the participants exhibited different levels of confidence, providing insights into their subjective assessment of their readiness for emergency medical procedures.

A total of 20% of the participants responded 3 out of 5, signifying a moderate degree of confidence and suggesting a possible requirement for more reinforcement or practical training. The largest proportion, accounting for 55.2% of the participants, responded 4 out of 5, indicating a significant level of self-assurance in their competence to provide first aid and CPR. This implies a generally favourable evaluation of their level of expertise and preparedness in the context of emergency response. Moreover, it was found that 22.4% of the participants exhibited a substantial degree of confidence, 5 out of 5 which is indicative of persons possessing advanced expertise or undergoing comprehensive training. It is worth noting that a non-response rate of 1.7% was observed in the study.

Table 4: The distribution of the participant responses on the question "I am confident in my ability to administer first aid and CPR based on my current knowledge" in a 5-point scale.

Confidence Level (in a 5-point Likert scale)	Number of responses	Percent
3	12	20.7
4	32	55.2
5	13	22.4
Non responder	1	1.7

4. Discussion

The findings of the demographic study revealed a notable gender imbalance, since all respondents identified themselves as male. This observation implies that the marine industry in Myanmar is largely controlled by men. Furthermore, the study revealed a heterogeneous age composition among the participants, encompassing individuals aged 30 to 59 years. Notably, the age groups of 30-39 and 40-49 had the highest representation, suggesting a substantial proportion of seafarers at their peak professional years. A significant section of the participants (43%) had between 1-5 years of experience, suggesting a considerable number of individuals who are relatively new to the marine sector.

The assessment of first aid and CPR knowledge yielded results that were consistent with the latest criteria, highlighting the crucial abilities required for ensuring safety in marine settings. Significantly, the volunteers

demonstrated impressive expertise in burns care (81%) and CPR (100%), in accordance with established benchmarks such as the criteria set by the American Heart Association (Pellegrino et al., 2020). Nevertheless, there were places where the level of competence in bleeding management (60%), treating unresponsive patients (64%), and comprehending the chain of survival (60%) was quite low, suggesting possible deficiencies in knowledge.

According to the European Resuscitation Council First Aid Guideline (Zideman et al., 2021), effective haemorrhage control is essential for treating wounds and reducing the potential for further damage. Managing unresponsive patients necessitates a prompt and precise reaction, since it frequently entails life-preserving treatments. Comprehending the chain of survival is essential for orchestrating a series of acts that can greatly influence the result of a marine emergency. Based on a comprehensive review of marine incidents spanning fifty years (Luo & Shin, 2019), the research highlights that despite significant endeavours to improve maritime safety through technology progress, navigation enhancements, and crew education, human error continues to be the key factor behind the maritime medical emergency accidents. In order to enhance marine safety and reduce human error during emergencies, it is crucial to enhance the quality of first aid training programmes. It is essential to have customised curriculum specifically designed for the marine setting, which include realistic scenarios and employ a multi-disciplinary approach.

Similarly, the correlation study revealed a strong positive association (r=0.580) between the overall scores of first aid knowledge and the experience of seafarers, which supports the idea of experiential learning in emergency response (Türkistanlı & Sevgili, 2018). The aforementioned connections highlight the importance of customising training programmes to suit the different levels of expertise among seafarers, while also ensuring that they adhere to the recommended best practises outlined in international recommendations.

An analysis of participants' perceptions regarding their self-assurance in doing first aid and CPR provides useful insights into their subjective evaluations of preparedness for emergency first aid preparedness. Significantly, 20% of participants indicated a moderate level of assurance, assigning themselves a rating of 3 out of 5. This indicates a possible requirement for more reinforcement or hands-on instruction to further strengthen their confidence (Häske et al., 2022). Majority of participants, 55.2%, expressed a high level of confidence with a rating of 4 out of 5, indicating a generally positive evaluation of their competence in first aid and CPR according to established guidelines. Furthermore, an additional 22.4% gave themselves a perfect score of 5 out of 5, suggesting advanced expertise or comprehensive training.

5. Limitations and the Future Research

A significant limitation of the study is the absence of a skills assessment component, which is considered the most essential aspect of first aid training (Forbes, 2020). This is because the study solely relies on self-reported data regarding participants' confidence levels in administering first aid and CPR. The inherent subjectivity of self-assessment may induce response bias (Mazor et al., 2002), which can possibly result in an overestimation or underestimating of true confidence levels. The study's assessment of participants' competency in emergency medical procedures is incomplete due to the absence of a direct examination of their practical abilities. Incorporating objective skills evaluations or simulation exercises in future research endeavours would enhance the evaluation of seafarers' preparation in maritime first aid and CPR administration. This approach would complement self-reported data and result in a more comprehensive and reliable assessment.

6. Conclusion

Overall, this research endeavour that centred on the maritime industry has yielded significant findings regarding the preparedness of seafarers to perform CPR and first aid, placing particular emphasis on the confidence levels of the participants. The results indicate a wide range of perceived confidence levels, although the majority of respondents demonstrated considerable self-assurance in accordance with established protocols. Despite the limitations of the study, the analysis of confidence levels offers a foundation for customised training interventions, highlighting the importance of addressing varying confidence levels to enhance overall emergency medical

preparedness in the maritime context. This research functions as a catalyst for subsequent investigations aimed at enhancing assessments and interventions in maritime safety, thereby augmenting the collective comprehension of seafarers regarding their proficiency in emergency procedures.

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