Jurnal Sains Teknologi Transportasi Maritim
Volume 7 No. 2 November 2025, pp.85-97
DOI: 10.51578/j.sitektransmar.v7i2.114
e-ISSN 2722-1679 p-ISSN 2684-9135

https://jurnal.akmicirebon.ac.id/index.php/akmi

Sailing Toward Stress: How Compliance Demands Influence Seafarers' Wellbeing

Dec Airo Mari Ausan [1*],
1. Human Studies Department, Acknowledge Education, Sydney, Australia

*email: decairo.mari@gmail.com

Article Info

Keywords:
Seafarers, Seafarers' Welfare,
Port State Control,
Working Conditions,
Maritime Compliance,
Crew Wellbeing.

Received: 2025-06-12; ***Reviewed:*** 2025-09-11;
Revised: 2025-10-12; ***Accepted:*** 2025-10-15;
Published: 2025-11-15

Abstract

Purpose - This study examines how preparation for strict Port State Control Inspections (PSCI) by the Australian Maritime Safety Authority (AMSA), influences the welfare, living and working conditions of seafarers on board PSC vessels in New South Wales. It examines how the onus of ensuring regulatory compliance for ships – particularly in terms of safety, the environment, and labor – impacts the physical, mental, and emotional well-being of seafarers. Some elements of seafarers' welfare were examined, revealing that compliance with work/rest hours, food quality, accommodation, leadership practices, and the length of the voyage are determining factors.

Methodology – A quantitative, cross-sectional research design was employed to gather information from 300 seafarers across various ranks and vessel classes. Data revealed strong demand for improvements in leadership, standardization of living conditions, management of fatigue, and regard for seafarers' physical well-being.

Findings – The findings show extensive differences in welfare between ranks, with senior (management and operational) staff reporting higher levels of fatigue, stress and dissatisfaction than support personnel. A last-minute rush of too little food, improper accommodation and disrupted work/rest hours in expectation of an imminent inspection heightened stress and fatigue.

Originality –.These findings suggest that allowing sufficient time to carry out inspections and attending to the welfare of seafarers can significantly reduce stress levels, which, in turn, improves the morale of the entire crew, leading to safer.

INTRODUCTION

Seafarers represent some of the pillars of the maritime industry worldwide, but they face some serious issues that impact their well-being, health, and safety at sea. This is pertinent to rigorous regulatory inspections that will be conducted in Australian ports, where the Australian Maritime Safety Authority (AMSA) inspects ships to such critical standards. The Australian Maritime Safety Authority (AMSA) conducts Port State Control Inspections (PSCI). PSCIs can include safety inspections, maintenance inspections, and environmental compliance inspections of the ship to enhance the ship's crew (AMSA, 2024). As vital as it is, preparation can be taxing to the crew as they have to ascertain if the vessel meets international standards to the International Convention for the Safety of Life at Sea

*Corresponding Author

(SOLAS), the International Maritime Solid Bulk Cargoes (IMSBC) Code and the Maritime Labour Convention (MLC) (Nelaj, 2023). Such rigorous preparation can be detrimental to the physical and mental health and emotional well-being of the seafarer and poses serious threats to their well-being.

Existing studies on the welfare of seafarers have identified several problems, including fatigue, poor health, stress, and inadequate rest, among others, which are exacerbated by high demands and prolonged working hours (Devereux, 2017; Ghosh & Daszuta, 2019). That said, while international conventions can provide a framework for improving working conditions, the added burden of reporting compliance — especially ahead of inspections — presents further stressors for seafarers. Research by Bhatia et al. (2024) highlights a crucial discrepancy between work/rest hour compliance (as reported during PSC inspections) and the actual practices among crew members, with many seafarers manipulating records to evade penalties or to comply with the standards set during inspections. Moreover, fatigue continues to be a significant problem in the industry that plays a role in safety, and worsens health outcomes. For example, Xu (2023) discussed exhaustion prevention in the maritime sector and suggested that it should be addressed through the implementation of sleep-monitoring systems like wearables and smart mattresses as well as automation of the recording of work/rest hours to minimize incidences of fatigue in the industry and increase general safety. Xu's study further emphasizes the importance of regulatory acceptance in achieving better fatigue management, suggesting the need for fatigue detection systems to be integrated into Port State Control (Xu, 2023).

Food quality and accommodation conditions are also at the core of seafarer welfare, alongside fatigue. Baum-Talmor and Şahin (2024) highlights that chartering FOC vessels usually entails implementing severe cost-cutting measures, including on food supplies, meaning that the provisions are often insufficient and do not meet the nutritional requirements of multinational crews. Not just physical well-being, these subpar provisions also lead to dissatisfaction and psychological strain of seafarers. The study also highlights the hierarchical nature of onboard organizations, with officers often having access to better food than other crew members, creating another level of disparity. The challenges to mental health, as well as the added layer of burdens involved in navigating regulatory compliance, add immense pressure in such unprecedented circumstances.

The research aims to investigate the pressures exerted by the need to prepare for inspections within Australian ports, specifically in New South Wales, and how this might affect the welfare, living and working conditions of seafarers. In particular, it will examine the time between the last port and arrival at an Australian port, as well as the impact of the preparation phase on the physical, mental, and emotional health of the sailors. Modules of inquiry will involve food quality, living quarters, field hours, rest potential, and overall workload. The study will also examine how pressure is handled onboard, looking at the role of hierarchy, including that of the captain or chief engineer, and whether this affects the pressures of operating an environmentally friendly vessel or impacts crew morale and satisfaction. The duration of voyages, whether short or long, will also be compared in reference to preparation, with the hypothesis that longer voyages allow better planning and help reduce stress levels.

The intention is that the findings from this research will improve the understanding of how preparing for stringent port inspections in Australia affects seafarer welfare. Insights from the findings will also help develop policies and practices to promote the health, safety, and well-being of seafarers in the future, ensuring that regulatory compliance does not compromise their well-being.

Aspects of seafarers' welfare have attracted growing attention as a research field in maritime studies, not solely the issues they face while at sea. Several studies have documented the conditions in which seafarers find themselves; few studies have explicitly focused on the pressures seafarers face during preparations for rigorous inspections (for example, at Australian ports). The existing literature not only emphasizes the age-old challenges of fatigue and work/rest hour compliance, food quality, accommodation and mental well-being of seafarers but also the critical importance of leadership in times of stress. This section compiles previous studies on all these topics, with a particular focus on the port inspections that Australian waters present.

Fatigue and Its Impact on Seafarer Well-being. Fatigue is a well-known problem in the maritime industry. Xu (2023) describes seafarer fatigue prevention and management clearly demonstrating that the consequences are globally paramount to both maritime safety and wellbeing of seafarers themselves. Fatigue is a primary source of human error and can degrade performance, safety and crew effectiveness, evidence that Xu's work is critical to, as it plays out across the wider aerospace sector. It suggests using sleep-tracking technology, ranging from wearables to smart mattresses, to detect sleep quality and mitigate the effects of fatigue (Abila, et al., 2023; Galić, et al., 2023). Xu also recommends systems that automatically record hours worked/rested needing to be worked on as it reduces the opportunity for misreporting and allows for better tracking of fatigue state (Xu, 2023). Given the heightened pressure to fix existing health issues and successfully pass inspections in Australian ports, these findings are useful to help understand how preparation for such heavy inspections may add to overall levels of fatigue. Poorly managed fatigue that could have a considerable impact on the physical and mental well-being of seafarers for the duration of the voyage to Australia's ports (Cham, et al., 2021).

Work/Rest Hour Compliance and Inspection Pressures. Compliance with the hours of work and rest requirements in the wake of potential inspections is crucial to ensuring the health and safety of seafarers (Kamis, et al., 2020). Bhatia et al. (2024), conducted a detailing investigation on the discrepancy between work/rest hour data recorded on board and that reported during Port State Control (PSC) inspections. The researchers discovered that compliance rates reported during PSC inspections were extremely high (90.0% to 99.3%), but surveys of seafarers indicate compliance rates are significantly lower (11.7% to 16.1%), while many seafarers reported that falsifying documents was a well-practiced strategy to avoid the consequences of inspections. These findings showed how stress and fear of the impact of inspection can stack on health issues to fatigue and also anxiety, in particular when seafarers are forced to provide incorrect information regarding work/rest hours.

Mental Health Challenges: Stress, Anxiety, and Isolation. The isolating nature of their work means seafarers are more than often victims to mental health conditions, including depression, anxiety and stress. A scoping review of the literature on seafarers' well-being published by Şenbursa (2024) identified the main contributing factors to mental health problems as isolation, long working hours, and separation from family. The study also references the multiplying effects of the COVID-19 pandemic which lead to heightened isolation for seafarers. The review further calls for improved access to mental health provision, including counselling, for seafarers; and for better communications facilities on board so seafarers can contact family members. The case for mental health intervention demonstrates a compelling need — particularly when considering the mental burdens which port inspections would represent for seafarers working at Australian ports. For, although adjusting to strict regulations can be anxiety provoking in itself, it compounds the growing cognitive load on seafarers.

Food Provisions and Seafarer Well-being. Another primary element in the well-being of any crew is the quality of food available to seafarers — this directly impacts seafarers' physical and mental health (Ausan, 2025). Baum-Talmor and Şahin (2024) examined the link between employment practices, cost minimization strategies, through to providing higher quality food on cargo vessels. They discovered that cost-cutting, especially on flag-of-convenience (FOC) vessels, often leads to insufficient and culturally inappropriate food. The lack of good food becomes worrisome not only physically, as it leads to fatigue and malnutrition but also mentally, as it breeds dissatisfaction and frustration. The study found that the disparity in food quality was particularly acute within the crew, with officers being provided better provisions than lower-ranks. This hierarchy cultivates some tension, but it becomes latent, and heightens the sense of inequality, layers up the complaints against crew, is to make them feel invalid and unsatisfied in return. This evidence is especially pertinent to this research, as inadequate food quality and the living conditions of the ship, in preparation for an Australian port inspection, can play a substantial role in crew morale and well-being.

Work Organization and Employment Practices. The organization of work and the practices of employment at sea are also critical to the health and safety of seafarers (International Seafarers' Welfare and Assistance Network, 2021). Devereux (2017) explored the impact of work organization and employment practices on seafaring occupational health, safety and well-being. The analysis indicated that seafarers had worse health outcomes in the early part of their tour and at its end, with marked improvement at the penultimate week of their contracts (Brooks & Greenberg, 2022). The study also noted long transitions between tours, poor familiarity with ships, and imperfect incident reporting systems as contributors to poor well-being. In the work organization standard, this represents a key area of seafarer's welfare, primarily relating to preparation for the inspections. It can be argued that degradation of service depends on a series of factors and growing workload with the increasing number of regulations before the renewal of inspections of Australian ports can further enhance this process, especially if crews are already fatiguing out or stressed from previous tours (Ali, et al., 2023).

Risk Management and Organizational Practices. According to Ghosh and Daszuta (2019), many risk assessments done on ships fail, and there are various factors that prevent effective risk management. It found that the lack of training alone non-technical skills such as leadership and decision-making restricted seafarers conduct of appropriate risk assessments. Furthermore, research stresses the failure of procedural risk management approaches, which very often were just general lists of matters to move ahead through dynamic maritime processes. Risk and safety conceptions were also influenced by cultural and organizational traits including the hierarchical structure and diverging safety cultures in the background of the seafarers. These factors are magnified by the pressures of getting the ship ready for inspection and a possible culture of silence. The existing hierarchies on ships may dissuade seafarers from reporting breaches of safety, risking the safety and welfare of the crew.

Regulatory Compliance and Port State Control. One of the major regulatory frameworks that seeks to improve seafarers' living and working conditions is the Maritime Labour Convention (MLC, 2006). In her exploration of the MLC in the Australian context, Carey (2017) emphasized the MLC's impact in regulating work/rest hours and guaranteeing wages/clear employment contracts. The study also highlighted MLC's shortcomings in respect to the fishing industry, which is excluded from the MLC and has additional IUU fishing-related challenges. In order to address this issue, Carey calls for more rigorous enforcement of labor rights in the fishing industry, particularly through the role of Port State Control (PSC) inspections in implementing international conventions. These findings are relevant to this study because, when ensuring compliance with port regulations—especially during the pre-inspection preparations at Australian ports, the pressures may totally reverse the order and lead to an adverse effect on seafarers' well-being, particularly if there is insufficient enforcement in the regulatory framework.

The literature review emphasizes the various issues that seafarers encounter whilst working at sea such as fatigue, compliance to recommended work/rest hours, mental health, food quality, and work organization. The review found that consistent with global trends, preparedness for port inspections, mostly of vessels at Australian ports, plays a major part in increasing these pressures. Fatigue, stress and mental health issues add to this, along with pressure to continue to pass exhaustive regulatory inspections. Moreover, the study emphasizes how leadership, food provisioning and risk management influence seafarer well-being. The literature above forms a solid basis for the current study, where we aim to explore how preparation for Australian port inspections affect seafarers' health and well-being on their voyage to Australia.

Problem Statement. The welfare, living and working conditions of seafarers are therefore fundamental to their health, safety and performance at sea. The conditions, however, are often undermined by the enormous pressures on seafarers, especially when preparing for the rigorous inspections mandated by ports in Australia. Carey (2017) describes inspections conducted by Port State Control Inspections (PSCI) by the Australian Maritime Safety Authority (AMSA) as critical to ensuring that vessels comply with international maritime safety, labor and environmental standards. Despite international frameworks

designed to enhance seafarers working and living conditions, including the Maritime Labour Convention, the inspections associated with these conventions have been described as stressors that lead to increased stress, fatigue, and overall compromised well-being (Bhatia et al., 2024; Xu, 2023).

This preparatory stage until port inspections, in particular, sees a rise in fatigue, stress and mental health challenges. Xu (2023) further elaborates on these issues focusing on the greater importance of fatigue management, where poor working/rest hour regimes, as well as sub-optimal sleep management systems, lead to issues impacting the general health and performance of the crew but also reduce safety. Moreover, aspects such as insufficient food supplies, substandard accommodation, and long working hours (which frequently arise due to cost-cutting measures) play an important role in the occurrence of physiological and psychological illnesses among sailors (Baum-Talmor & Şahin, 2024).

While these challenges are better understood, there is a gap on how the preparatory phase for inspections at ports in Australia specifically affects seafarer welfare. To address this gap, this study aimed to investigate the associations between the pressure to prepare for inspections by AMSA and seafarers' physical health, mental health and emotional health during their voyage to Australian ports. In particular, this study identifies the impact of food quality, accommodation, work/rest hours, leadership practices, and voyage duration on seafarer welfare.

1. Seafarer welfare is the physical, mental and emotional well-being of individuals at sea. It includes aspects such as health and safety standards, working and resting hours, accommodation, food quality, leisure activities, and communication to family; these are all elements that indicate the condition of the seafarer to perform his/her professional duties effectively and safely.

2. Port State Control Inspection (PSCI) involves the inspection of foreign-flagged vessels by a country's nautical authorities to ensure conformity with relevant International Conventions as well as national safety standards. Australia's Marine Safety Administration (AMSA) maintains its own PSCI to ensure boats entering its ports comply with international safety, labor & environmental guidelines (AMSA, 2024).

3. The MLC, 2006, is an international treaty on work under which the International Labour Organization (ILO) has developed consistent work for general seafarers this would ensure that seafarers work under decent conditions. This will raise the welfare and rights of seafarers internationally with a focus on work/rest hours, wages, medical care and accommodation provisions

4. Work/rest hours (also known as hours of service) are regulated periods of work and rest that all seafarers must adhere to under maritime conventions (for example, the MLC and the STCW, or Standards of Training, Certification, and Watchkeeping). The intent of such regulations is to ensure that the seafarers have an adequate rest period to reduce fatigue and promote safety and health.

5. Fatigue is a state of physical and mental weariness that greatly affects performance and safety. Seafarers experience fatigue as they do long working hours with less rest and long periods of isolation. Fatigue management that safeguards the health and safety of seafarers — particularly in advance of inspections — is a vital part of compliant operation.

6. Leadership is the set of responsibilities of senior officers (e.g., the captain or chief engineer) to direct and oversee the ship's crew. Staffing refers to the manning and duties assigned to the crew, while the organizational structure is related to the hierarchy of the crew, its implications in terms of communication, delegation of functions, and how to manage the crew as a whole. The right preparations, however, can make port inspections less stressful and even improve welfare overall.

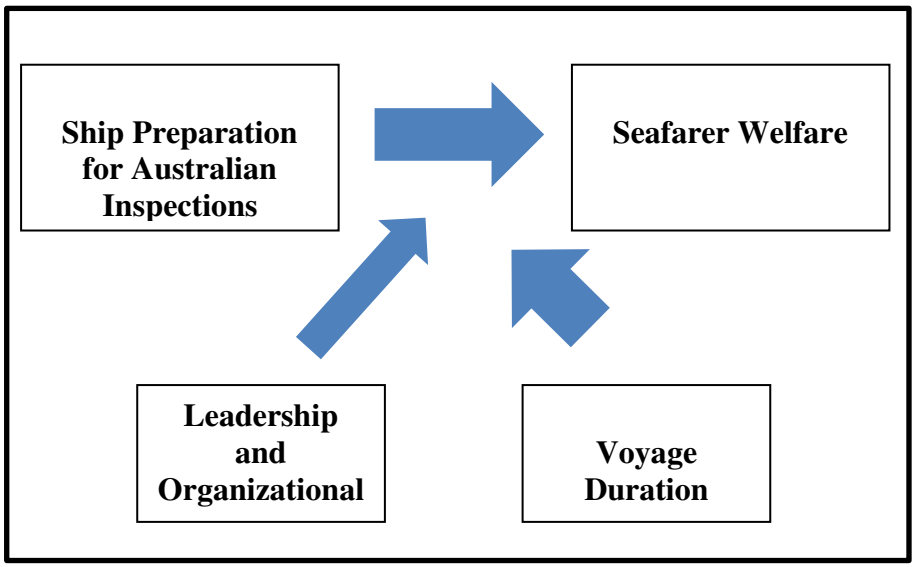

Figure 1. Conceptual Framework

Independent Variable (IV): Ship Preparation for Australian Inspections. This study's Independent Variable (IV) is Ship Preparation for Australian Inspections, which refers to all activities and efforts made to ensure the vessel is in accordance with regulatory requirements to enter Australian ports. Preparations can impact on seafarers' welfare in both direct and indirect ways:

1. Ship Maintenance: Regular maintenance and safety checks are required not only to meet the inspection standard but also can increase the workload and lead to fatigue (Ghosh & Daszuta, 2019).
2. Safety Drills and Compliance with Regulations: Safety drills, such as fire drills, evacuation drills, and emergency preparedness drills, are widely recognized as important, but they contribute to stress and fatigue by being performed on a required basis when under pressure (Nelaj, 2023).
3. Work/Rest Hours Compliance: Compliance with the work/rest hours is critical to mitigate fatigue. During inspection periods, the pressure to adhere to these rules can add to stress and fatigue if crew members adjust their hours in order to fulfill inspection standards (Bhatia et al., 2024).
4. Food and Accommodation Quality: The quality of food and living conditions onboard plays a crucial role in maintaining the mental as well as physical health of the team on board. Cost-cutting measures have been shown to affect fatigue and dissatisfaction, and much attention should be given to food provisions and accommodation conditions (Baum-Talmor & Şahin, 2024).
5. Risk Management and Safety Protocols: Safe working environments are ensured through effective risk management procedures. But the poor safety provisions and improper application of the risk management techniques can act as adding stress and anxiety level during the time of inspection (Ghosh & Daszuta, 2019).

Dependent Variable (DV): Seafarer Welfare. The dependent variable (DV) is Seafarer Welfare, consisting of their physical, mental and emotional well-being. These aspects of welfare are directly affected by the various elements of ship preparation:

1. Physical Health: Seafarers' physical health hinges on insufficient and poor-quality eating, working long working hours with little sleep, continuous exposure to hazardous environments, and other

factors. Fatigue, mostly caused by long working hours and bad sleep, compromises physical health directly (Xu, 2023).

2. Mental Health: Seafarers' mental health is often impacted by stress, anxiety, and isolation and may be heightened due to pressures to prepare for inspections. Not communicating with family members and not having recreational activities; people are having many problems due to these conditions (Şenbursa, 2024).
3. Emotional Well-being: Emotional well-being addresses crew morale, job satisfaction and overall happiness. Elements such as food quality, accommodation, work-life balance, and leadership practices can either enhance or deteriorate emotional wellness (Baum-Talmor & Şahin, 2024).
4. General Satisfaction: The general satisfaction of seafarers with their working and living conditions is essential for their welfare. This can be due to poor conditions or high stress causing dissatisfaction and, accordingly, a negative impact on performance and health (Devereux, 2017).
5. Ship Preparation for Australian Inspections (IV) has a moderated relationship with Seafarer Welfare (DV) through Leadership, as well as Voyage Duration. Leadership practices onboard, from how well senior officers manage the preparation process to how crew well-being is prioritized, can affect how stressful and satisfying the experience feels for the crew. The length of the voyage also affects this: Longer voyages can mean more time to get ready, which may cause less stress, while shorter voyages may increase pressure due to a shorter time frame for preparation.

RESEARCH METHOD

The research employed a quantitative research methodology to assess the effects of preparation of ship on seafarer welfare in their voyages to the ports of Australia, more specifically ports in New South Wales, Australia. Data will be gathered using a cross-sectional survey of seafarers' welfare at different time points throughout their voyages — notably during the preparation before inspections in Australian ports. The quantitative aspect include variables including physical and mental health, work/rest hours, food and accommodation quality, leadership, and the duration of voyages, as well as statistical analysis to find correlations and patterns, should there be any significant relationships between these aspects and seafarer welfare to help correlate these items. This is appropriate as it provides a systematic approach to the examination of associations between variables, along with the opportunity to assess hypotheses concerning the influence of ship preparation on seafarers' well-being.

Primary Source of Data. This study will primarily collect data via surveys to be administered to seafarers on ships which are getting ready to dock in Australian ports. These questionnaires will cover both closed-ended questions and Likert items aiming at examining seafarers' perceptions regarding their welfare while onboard. The survey covers physical health, mental health, emotional well-being, work conditions, food quality, accommodation, leadership effectiveness, and how the length of the voyage plays a role. Key indicators to be evaluated will be the level of fatigue, stress, anxiety, job satisfaction, the quality of living conditions, and the quality of leadership preparedness. This primary data will give a thorough insight into how each part of ship preparation affects seafarers' overall health and satisfaction in their sailing voyages.

Sampling Method. This study will utilize a stratified random sampling method to make sure that the sample is representative of the population of seafarers. Stratification will be performed taking into account critical variables, including types of vessel (for example, cargo ships and passenger ships), rank (for example, officers and crew) and voyage duration (for example, short versus long), among others. It is a useful method as it guarantees that there will be sufficient representation of each sub-group, providing a basis for a comparison of welfare experiences across vessel types, board roles and cater to the voyage length. It will invite seafarers onboard a range of vessels getting ready to dock into Australian ports.

Target sample size is 100 per position level seafarers (Operations, Support, and Management) totaling 300 respondents. With this size, it is sufficient for statistical power so the data can be meaningfully analyzed and reliable comparisons can be made between subgroups. This sample size is large enough to yield sufficient variation to identify trends and relationships, but small enough to make data collection and analysis feasible. By using stratified sampling, researchers are able to ensure that all relevant subpopulations are included in the research study so that ship preparation can be examined within those as well to allow for a broader exploration of how ship preparation affects seafarer welfare in different contexts.

Participants. Participants in the study will comprise seafarers who are currently working on board vessels that have to docked at Australian ports specifically in New South Wales. It includes officers (e.g., captains, chief engineers) and crew members (e.g., deckhands, cooks, engineers). The inclusion of both officers and crew members will allow researchers to investigate if the impact of ship preparation on welfare differs by rank. Participants had to have been onboard the ship for at least two weeks at the time of enrolment to guarantee adequate exposure to the workspace and living environment being studied. Seafarers were excluded if they were unwilling or unable to provide informed consent or had been onboard for less than 2 weeks, thus ensuring that the data represents a well-formed context of the seafarer's experience throughout the voyage.

Data Collection Tool. The main method for data collection will be a self-administered survey that will be created to collect seafarers' impressions of a range of elements that can potentially impact their well-being during the voyage. It will consist of multiple parts, each part dealing with different areas of welfare. Questions will include physical health (e.g., fatigue, quality of sleep), mental health (e.g., stress, anxiety, depression), emotional well-being (e.g., job satisfaction, morale), work conditions (e.g., compliance to work/rest hours, workload), living conditions (e.g., quality of food and accommodation), and leadership (e.g., effectiveness of leadership and crew management). Questions with a Likert scale will enable respondents to measure their level of satisfaction or experience on a scale of 1 (strongly disagree) to 5 (strongly agree), with the aim of obtaining data that can be quantified into statistics.

Besides standard questions, the survey will collect demographic data on the participant (age, gender, rank, experience, type of vessel, etc.) to facilitate contextual analysis and comparison between different subsets of the sample. Take such steps to identify whether there is any correlation between demographic factors and seafarer welfare.

Data Analysis. Data analysis for this study was conducted using descriptive and inferential statistics. Descriptive statistics were used to summarize the sample demographics, including position level, age, voyage duration, and type of vessel. The analysis also examined seafarer responses to survey questions related to their welfare during the preparation for Port State Control Inspections (PSCI). Correlation analysis was performed to assess the relationships between the independent variable (ship preparation) and the dependent variable (seafarer welfare), with a focus on understanding how various aspects of preparation, such as work conditions, food quality, accommodation, and leadership, influence seafarers' physical and mental health.

Additionally, a thematic analysis was employed to identify key patterns and trends across position levels, particularly in relation to the pressures of preparing for PSCI inspections. This analysis helped to explore how different factors—such as the level of leadership, voyage duration, and overall work environment—differentially impacted seafarer well-being based on their role and rank. Regression analysis was conducted to further examine which factors, such as fatigue, work/rest hour adjustments, and the quality of living conditions, had the most significant correlations with seafarer welfare. These analytical approaches provided a comprehensive understanding of the complex dynamics between ship preparation for inspections and seafarer welfare, highlighting critical areas for improvement.

RESULTS AND DISCUSSIONS

The study used a stratified sample of 300 seafarers across three strata: Management (33.33%), Operational (33.33%), and Support (33.33%). The sample was nearly entirely male (98.33%), female being 1.67%, as was the gender makeup in the maritime workforce. The age varied by rank with Management being the oldest (mean: 50.23 years, median: 50.5 years), then Support (mean: 36.23 years, median: 40 years), then Operational being the youngest (mean: 30.83 years, median: 28 years).

Length of voyage differed by grade level. Support staff spent the longest periods on voyage (mean: 19.93 weeks, mode: 28 weeks), followed by Operational personnel (mean: 19.36 weeks, mode: 14 weeks) and Management personnel (mean: 15.42 weeks, mode: 10 weeks). Different types of vessels were encountered in the sample, with container vessels being predominant (26%), followed by tankers (18.67%) and bulk carriers (19.33%). The representation provided a typical picture of seafarer welfare by ranks, vessel types, and length of voyage that enabled strong statistical comparisons.

Table 1. *Demographic profile, Management, Operational, and Support.*

Demographic Factor	Management	Operational	Support
Position Level	33.33% (100)	33.33% (100)	33.33% (100)
Gender	Male: 98.33%, Female: 1.67%	Male: 98.33%, Female: 1.67%	Male: 98.33%, Female: 1.67%
Age (Mean)	50.23 years	30.83 years	36.23 years
Age (Median)	50.5 years	28 years	40 years
Voyage Length (Mean)	15.42 days	14.36 days	14.93 days
Voyage Length (Mode)	10 days	14 days	16 days
Vessel Type (Top 3)	Container Ship: 26%, Tanker: 18.67% Bulk Carrier: 19.33%	Container Ship: 26%, Tanker: 18.67%, Bulk Carrier: 19.33%	Container Ship: 26%, Tanker: 18.67%, Bulk Carrier: 19.33%
Sample Size	100	100	100
Total Sample Size	300		

Thematic Discussion of Results. The analysis focused on the welfare of seafarers during preparation for Australian Port State Control Inspections (PSCI). The findings show that preparation for PSCI inspections results in increased physical and mental strain, particularly for higher-ranking staff. These pressures manifest in fatigue, stress, and other welfare challenges, with significant disparities across position levels for visual representation of numerical data see (Appendix B).

1. *Physical Health & Fatigue*: Fatigue levels were notably higher for Management and Operational staff compared to Support staff. Specifically, Management and Operational staff reported mean fatigue scores of 4.24 and 3.04, respectively, while Support staff reported a significantly lower fatigue score of 1.92. The quality of sleep followed a similar trend: Management and Operational staff reported poorer sleep quality (mean scores of 4.24 and 2.79) compared to Support staff (mean score 1.87). These findings underscore the physical toll of preparing for PSCI inspections, which can lead to fatigue due to long working hours and heightened stress, particularly among those in leadership and operational roles. The physical demands on senior staff are compounded by their increased involvement in decision-making, ensuring compliance, and overseeing ship readiness, contributing to greater fatigue and physical health issues. The findings align with previous research by Bhatia et al. (2024) and Xu (2023), which highlight the role of regulatory compliance pressures in exacerbating fatigue among seafarers.

2. *Mental Health & Stress*: Mental health challenges were significantly higher among Management and Operational staff. Management staff reported high levels of stress, with a mean score of 4.23, and similar stress levels were reported by Operational staff (mean score 2.87). Support staff, however, reported lower stress levels (mean score of 1.97). These results suggest that the pressure to ensure compliance with PSCI inspection requirements places greater mental and emotional strain on higher-ranking seafarers. The added responsibility, leadership expectations, and the stress of preparing for inspections lead to heightened levels of anxiety, which are exacerbated by the isolating nature of the work, as reported by Şenbursa (2024). Management and Operational staff are more likely to experience isolation, given their leadership roles, which limits their opportunities for social interactions and emotional support during voyages.

3. *Work Conditions and Compliance*: A key aspect of the study was the impact of work conditions, particularly work/rest hours, on seafarer welfare. Management and Operational staff reported adjusting their work/rest hours to meet inspection requirements (mean scores of 4.09 for Management and 4.32 for Operational), while Support staff rarely reported these adjustments (mean score of 1.82). This suggests that the pressure to comply with PSCI regulations is more acute for higher-ranking staff, leading to irregular work/rest schedules that contribute to fatigue and stress. The findings are consistent with those of Bhatia et al. (2024), who highlighted the discrepancies between recorded and actual work/rest hours during PSCIs. Adjusting work/rest hours to meet inspection standards can have a direct impact on the physical and mental well-being of seafarers, particularly in higher-ranking positions where the burden of regulatory compliance is greatest.

4. *Food and Accommodation*: Food and accommodation quality was another area where significant differences were observed between position levels. Management and Operational staff expressed high satisfaction with food and accommodation (mean scores of 4.25 for food quality and 4.24 for accommodation for Management), whereas Support staff expressed dissatisfaction (mean scores of 1.83 for both food and accommodation). Baum-Talmor and Şahin (2024) found that substandard food and living conditions, particularly for lower-ranking crew members, contribute to dissatisfaction and psychological strain. The disparity in living conditions can exacerbate feelings of inequality and dissatisfaction, especially when senior staff are provided with better provisions and more comfortable accommodation. This inequality in resources can lead to lower morale, especially among Support staff, contributing to their overall lower satisfaction with their welfare.

5. *Leadership & Crew Management:* Leadership effectiveness was a critical factor in managing the pressures of preparing for PSCI inspections. Management staff reported high satisfaction with leadership effectiveness (mean score of 4.27), while Support staff reported significantly lower satisfaction (mean score of 1.79). Effective leadership can help alleviate the stress associated with inspection preparation by providing clear guidance, ensuring support for crew members, and

prioritizing welfare during demanding periods. The low satisfaction reported by Support staff indicates potential gaps in leadership practices at lower levels, which may contribute to the negative welfare experiences among this group. Strong leadership plays a key role in mitigating stress, improving morale, and ensuring that seafarers are adequately supported during the inspection preparation process.

6. *Voyage Duration and Stress:* The length of the voyage was found to correlate with stress levels, with longer voyages providing more time to prepare for inspections and consequently reducing stress. Management staff reported that longer voyages helped reduce stress levels (mean score of 4.35), while Support staff reported greater stress on shorter voyages (mean score of 1.82). This finding suggests that providing sufficient time for inspection preparations can alleviate stress and contribute to better overall welfare. Longer voyages allow seafarers to manage workloads, reduce the pressure of preparing for inspections, and ensure compliance with PSCI requirements without sacrificing rest or well-being. Xu (2023) similarly emphasized that sufficient preparation time reduces the strain on seafarers and mitigates the negative effects of rigorous inspections.

*Correlation Between Position Level and Seafarer Welfare***.** The study revealed a strong correlation between position level and seafarer welfare. Higher-ranking staff (Management and Operational) reported significantly more stress, fatigue, and dissatisfaction than Support staff. These differences are attributed to the increased responsibilities and pressure placed on senior staff to ensure compliance with PSCI inspections. Senior officers, such as captains and chief engineers, are directly involved in regulatory compliance, managing inspection preparation, and overseeing crew welfare. These duties place a higher burden on their physical and mental well-being, contributing to the heightened levels of stress and fatigue observed in the Management and Operational groups.

Other Correlations:

1. *Food and Accommodation Quality and Seafarer Welfare*: As discussed earlier, food and accommodation quality were strongly correlated with overall satisfaction and welfare. Support staff, who reported lower satisfaction with food and accommodation, also expressed lower overall satisfaction with their welfare (mean score of 1.95). In contrast, Management and Operational staff, who reported better conditions, had higher overall satisfaction (mean scores of 4.13 and 4.10, respectively). This highlights the importance of providing all crew members with adequate food and living conditions to improve overall welfare. Enhancing food quality and accommodation provisions for Support staff could significantly improve their morale and reduce psychological distress.

2. *Fatigue and Work Schedule Adjustments:* Fatigue levels were found to be strongly correlated with the frequency of adjustments to work/rest hours. Both Management and Operational staff reported higher levels of fatigue and more frequent adjustments to work/rest hours (mean scores of 4.24 and 3.04, respectively) compared to Support staff (mean score of 1.92). This suggests that managing work/rest hours effectively can reduce fatigue and improve overall welfare, particularly for those in leadership and operational roles. Fatigue management, including better tracking of work/rest hours and ensuring compliance with regulations, is crucial to maintaining seafarer well-being.

Recommendation. Based on the findings, the following recommendations are proposed to enhance seafarer welfare during PSCI preparations:

1. *Leadership and Welfare Prioritization:* Strong leadership is essential in reducing stress and fatigue. Shipping companies should ensure that leaders at all levels are trained to prioritize seafarer welfare and manage inspection preparation pressures effectively. Regular leadership

training and fostering a supportive environment can help mitigate the negative effects of inspections.

2. *Improvement in Food and Accommodation Quality:* Shipping companies should address the disparities in food and accommodation quality across rank levels. Ensuring that all crew members, particularly those in lower ranks, have access to adequate, nutritious food and comfortable living conditions will improve morale and reduce psychological distress.

3. *Fatigue Management:* Implement more rigorous fatigue management strategies. This can include better monitoring of work/rest hours, the use of technology for fatigue detection, and ensuring compliance with international regulations. Fatigue reduction will be crucial in improving physical health and overall welfare.

4. *Adequate Time for Inspection Preparations:* Shipping companies should ensure that there is adequate time for PSCI preparation, particularly for shorter voyages. Allowing sufficient time for inspections reduces stress, ensures better compliance, and helps seafarers maintain their physical and mental health.

CONCLUSIONS

In conclusion, this study provides a comprehensive analysis of how the preparation for Port State Control Inspections (PSCI) affects the welfare of seafarers, particularly during the stressful period leading up to inspections in Australian ports. The findings demonstrate significant disparities in welfare across different position levels, with Management and Operational staff reporting higher levels of fatigue, stress, and dissatisfaction compared to Support staff. These higher-ranking seafarers, who are more directly involved in the inspection preparation process, face increased physical and mental strain due to the pressure to ensure compliance with PSCI requirements. Additionally, the study highlights how factors such as food and accommodation quality, leadership effectiveness, and voyage duration play crucial roles in influencing seafarer welfare, with inadequate living conditions and inadequate leadership practices exacerbating the challenges faced by seafarers, particularly those in lower ranks. Based on these findings, several key recommendations are proposed to improve seafarer welfare. These include enhancing leadership practices to prioritize welfare, improving food and accommodation conditions, implementing effective fatigue management strategies, and ensuring adequate time for inspection preparations. Addressing these issues will not only alleviate the negative impact of inspection preparation on seafarer well-being but also improve overall morale, health, and performance. By focusing on the welfare of seafarers during these critical periods, maritime organizations can foster a healthier and more productive workforce, while also ensuring better compliance with regulatory standards, ultimately contributing to safer and more efficient maritime operations.

REFERENCES

Abila, S., Mansur, M., Abubakar, A., & Ibrahim, M. (2023). Empowering seafarers as agents of their mental health: The role of information and communication technology in seafarers' well-being. Inquiry, 60, 00469580231162752. https://doi.org/10.1177/00469580231162752

Ali, S. N. M., Ahmad, R., & Nordin, N. (2023). A study of psychometric instruments and constructs of work-related stress among seafarers: A qualitative approach. International Journal of Environmental Research and Public Health, 20(4), 2866. https://doi.org/10.3390/ijerph20042866

AMSA. (2024). *What is port State control?* Australian Maritime Safety Authority. https://www.amsa.gov.au/vessels-operators/port-state-control/what-port-state-control

Ausan, D. A. M. (2025). Perspectives and Expectations of Filipino Seafarers on Essential Services and Support Needs Extended in Australian Ports. *Ocean Life: An International Journal of*

Maritime Occupation and Safety, *3*(1), 1–15. https://doi.org/10.62718/vmca.ol-ijmos.3.1.sc-0225-007

Baum-Talmor, P., & Şahin, Ç. E. (2024). Employment practices, cost minimization, and their implications for food provisions and seafarers' wellbeing on board ships – A qualitative analysis. *INQUIRY: The Journal of Health Care Organization, Provision, and Financing, 61*, 1-11. https://doi.org/10.1177/00469580241229613

Bhatia, B. S., Carrera-Arce, M., Baumler, R., & Grech, M. R. (2024). Seafarers vs. Port State Control: Decoding work/rest compliance data disparity. *Marine Policy, 163*, 106105. https://doi.org/10.1016/j.marpol.2024.106105

Brooks, S. K., & Greenberg, N. (2022). Mental health and wellbeing of seafaring personnel during COVID-19: Scoping review. Journal of Occupational Health, 64(1), 12361. https://doi.org/10.1002/1348-9585.12361

Carey, L. (2017). The Maritime Labour Convention, 2006: The seafarer and the fisher. *ANZ Maritime Law Journal, 31*, 14-36.

Cham, B. S., Lee, J., & Kim, M. (2021). Investigating the joint effects of overload and underload on chronic fatigue and wellbeing. Work & Stress, 35(4), 344-357. https://doi.org/10.1080/02678373.2021.1888822

Devereux, H. (2017). *The impact of the organisation of work and employment at sea on the occupational health, safety, and well-being of seafarers* (Doctoral thesis, Cardiff University). Cardiff University Open Research. https://doi.org/10.2139/ssrn.3047117

Galić, M., Sić, L., & Slišković, A. (2023). "I constantly feel worn out": Mixed-methodology approach to seafarers' sleep on board. INQUIRY: The Journal of Health Care Organization, Provision, and Financing, 60, 00469580231159746. https://doi.org/10.1177/00469580231159746

Ghosh, S., & Daszuta, W. (2019). Failure of risk assessment on ships: Factors affecting seafarer practices. *Australian Journal of Maritime & Ocean Affairs, 1*(14), 1-14. https://doi.org/10.1080/18366503.2019.1658277

International Seafarers' Welfare and Assistance Network. (2021, April 1). Social interaction matters – What works for seafarers onboard. Seafarers Welfare. https://www.seafarerswelfare.org/news/2021/social-interaction-matterswhat-works-well-onboard

Kamis, A. S., Hassan, A., & Lee, C. (2020). The impact of basic training on seafarers' safety knowledge, attitude and behaviour. Journal of Sustainable Science and Management, 15(6), 137-158. https://doi.org/10.46754/jbsd.2020.08.012

Nelaj, D. (2023). *Exploring the impact of health, safety, and well-being on seafarers occupational effectiveness* (Master's thesis, Πανεπιστήμιο Πειραιώς). University of Piraeus. https://doi.org/10.2139/ssrn.3256954

Şenbursa, N. (2024). Seafarer's wellbeing on board: A scoping review. *Journal of Maritime & Ocean Affairs, 13*(1), 1-12. https://doi.org/10.7225/toms.v13.n01.w04

Xu, Y. (2023). *Research on prevention and management of seafarer fatigue* (Master of Science dissertation). [University Name]. https://doi.org/10.2139/ssrn.3567912