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INTERNATIONAL MARITIME HEALTH

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Welcome to ISMH17 Rotterdam

Dear Editor,

Dear colleagues and friends,

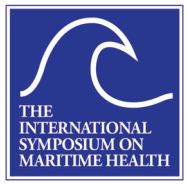
I am happy to welcome you to the 17th International Symposium on Maritime Health and to Rotterdam — a city shaped by the sea and defined by resilience. This year's symposium brings all of us together to address one shared mission: safeguarding the health and wellbeing of those who live and work at sea.

Our program reflects both urgency and opportunity. From mental health innovations and pandemic resilience to occupational medicine and digital health at sea, ISMH17 offers a solid platform for evidence-based dialogue and collaboration. We are better — together. Rotterdam's maritime legacy and modern infrastructure provide the perfect setting for this convergence of science, care, and community.

While we are presenting, sharing knowledge and discussing, the men and women out at sea, are working — delivering critical supplies to people and countries all around the globe, fishing the oceans or providing energy, often unseen and unheard. It is our responsibility to provide them with the best medical care possible and bring the crew back home safely.

Thank you all for participating and contributing in many ways. I extend my sincere thanks to the International Maritime Health Association (IMHA) for the trust and opportunity to host ISMH17 in Rotterdam. Our team is honoured to carry forward this tradition.

Walther Boon
Chair — ISMH17



Seafarers are key workers. The industry they serve is crucial. The health of seafarers is a critical factor in the sector — that is why maritime medicine is so important.

The International Maritime Health Symposium — ISMH celebrates its 17th edition this year in Rotterdam. It has become the leading networking event in Maritime Medicine.

The International Maritime Health Association — IMHA was founded in 1997 on the occasion of the 4th ISMH, in Oslo. The concept was to provide a forum for people, ideas, initiatives, research and any questions in relation to maritime healthcare.

ISMH is our most important event and gives everyone who is interested in the health of maritime workers the opportunity to meet, learn, and share their passion and knowledge about all aspects of the healthcare support of workers at sea.

From seafarers and fishers we are evolving fast into new jobs at sea. The cruise line industry needs large numbers of employees; the energy transition creates new jobs in the offshore industry. A future with fewer if any crew on board is not far away.

This brings significant but exciting challenges for a small group of international experts. We need to ensure that the medical support and the medical criteria and regulations keep track of all these evolutions and changes, and remain up to date and relevant to today's maritime industry.

The organizers in Rotterdam have done an excellent job in presenting a stimulating programme for participants, one that will give everyone inspiration to improve their work and become better professionals.

Rob Verbist
President — International Maritime Health Association

Dear ISMH17 participants,

The symposium team has worked very hard for over a year to facilitate a wonderful 17th International Symposium on Maritime Health. The success of every symposium does not just depend on its setting, the social events and the networking of individual professionals. Most important is the quality of the content of the contributions from the participants.

Maritime health is a critical field that deserves serious attention and advocacy. Demonstrating the evidence-based nature of maritime health is just as important as in any other sector of healthcare. This abstract book covers a great collection of such evidence-based content and showcases what encompasses healthy maritime working conditions.

The content of the 70 abstracts is first of all characterised by a wide variation of industries, such as cargo, fishery, cruises and offshore. The content of the abstracts also reflects the diversity of factors that need to be taken into consideration. Among these are: defining and supervising legislation and regulation, education, pre-employment medical examination, e-health, telemedicine assistance, evacuation, and search and rescue. In-depth medical themes include mental health, infectious diseases, diabetes, obesity and eye and ear problems.

All submitted abstracts were reviewed in a rigorous and robust manner by the members of the scientific committee. They had the difficult and time-consuming, but also rewarding, task of accepting and selecting the submitted abstracts. Some committee members were also helpful in advising authors on how to improve their abstract. Their efforts are highly appreciated. Especially the supportive role of Kirby Tong-Minh has been essential to establishing a high-quality program.

The times we live in are influenced by unprecedented and at the same time difficult to anticipate, changes. Inability to deal with global warming, migration and international trade regulation affects the working conditions and the overall physical and mental health of the workers at sea. It would be wonderful when the medical knowledge shared during the symposium and the presentations, the network expanded at STC-University and on board the SS Rotterdam, and all the inspiration gained from the posters, could contribute to continuously bringing crewmembers back home safely.

I wish you an unforgettable ISMH17 in Rotterdam.

Best regards,

Prof. Dr. Joost Bierens MD (Ret) PhD MCDM
Chair, Scientific Committee ISMH17

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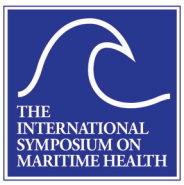

BOOK OF ABSTRACTS

17TH INTERNATIONAL SYMPOSIUM ON MARITIME HEALTH,

11–14 JUNE 2025, ROTTERDAM, THE NETHERLANDS

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Ensuring health equity for minority groups: Nine guidelines for physical and mental well-being at sea

Zoe Ogahara, Susanne Justesen

Global Maritime Forum, Human Sustainability

ABSTRACT

Introduction: The Global Maritime Forum will publish a report in mid-June outlining the research behind the development of the Sustainable Crewing Guidelines. Designed to address significant challenges in recruitment and retention within the shipping industry, these nine guidelines aim to improve working conditions and promote well-being at sea, particularly for minority groups.

Methods: Our methodology was designed to produce guidelines that are both data-driven, and likely to be implemented by companies. Our study involved extensive data collection in collaboration with 20 shipping companies. We conducted 115 in-depth interviews with female seafarers, followed by expert co-design workshops to develop practical solutions to identified challenges. To assess the effectiveness of these measures, we conducted pilot tests on 12 vessels and collected survey data from 424 seafarers on those vessels, as well as a baseline survey of 398 seafarers from outside the participating companies. The guidelines were also developed through further expert workshops and consultations with representatives of shore management and seafarers.

Results: Through this research, we identified nine key guidelines outlining best practices that shipping companies can implement to enhance the physical and mental well-being of seafarers. Our findings highlight areas where minority groups — such as those based on gender and ethnicity — face heightened vulnerabilities. These include social isolation, workplace harassment, poorly fitting personal protective equipment (PPE), and inadequate sanitary facilities. Such challenges negatively impact both physical safety and psychological health, often leading to higher stress levels, lower job satisfaction, and retention issues.

Discussion: Our guidelines provide concrete measures to address these disparities, ensuring that all seafarers, regardless of background, have equal access to safe and supportive working environments. In addition, our findings suggest that further research is needed to explore the specific stressors that disproportionately affect minority groups and how these intersect with broader occupational stressors at sea.

Conclusions: By implementing these guidelines, the maritime industry can foster a more inclusive, equitable, and sustainable workforce, improving both seafarer well-being and industry retention rates.

Keywords: guidelines; health equity; minority inclusion


Sustainable Crewing Guidelines
1. Establish clear expectations of respectful and professional behaviour
2. Zero tolerance and clear consequences for unacceptable behaviour
3. Set rank-specific criteria for tasks, training, and appraisals
4. Ensure appropriate equipment and facilities for all
5. Provide a reliable daily connection to the wider world
6. Reduce isolation by building supportive communities
7. Offer flexible contract lengths and respect contract terms
8. Provide paid parental leave
9. Continuously collect feedback and take action
ALL ABOARD ALLIANCE
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Real-time onboard point-of-care testing and therapy (POCT-T) for acute coronary syndrome: integrated ECG and troponin testing via smartphone

Claudio Bencini

Maritime Medical Associates. GDM GenteDiMare, Transport Malta

ABSTRACT

Introduction: To implement a real-time POCT-T (Point-of. Care Testing and Therapy) protocol for ACS that integrates rapid diagnostics and immediate treatment, supported by remote specialist teleconsultation.

Methods: I present an innovative model of emergency medical teleconsultation for the **out-of-hospital (OOH)** early diagnosis and treatment of Acute Coronary Syndrome (ACS). This approach combines two established **Point-of-Care Testing (POCT)** technologies, each independently validated for OOH ACS management. By integrating these diagnostic tools with immediate bedside antiplatelet therapy, we have implemented a comprehensive **Point-of-Care Testing and Therapy (POCT-T) protocol**.

This protocol has already been deployed on board some Italian-flagged Ro-Pax vessels, enabling **24/7 real-time clinical teleconsultation** between onboard healthcare providers and remote specialists. Consultations are conducted using available smartphones equipped with WhatsApp, requiring no additional telemedicine infrastructure. Both audio and video calls are supported, allowing the remote physician to visually assess the patient. Medical records and test results can be exchanged in real time as PDF files.

— The system enables POCT-T for ACS through:
— A miniaturized ECG device paired with a smartphone,
— Immediate bedside troponin testing using a **lateral-flow immunoassay**,
— Immediate bedside administration of **aspirin**.

Results: ACS real-time diagnosis and therapy can be achieved with minimal infrastructure, with effective specialist interaction via standard smartphones. Decision-making in maritime medical emergencies can be improved.

Conclusions: This model provides a feasible, scalable, and cost-effective approach to managing ACS in remote maritime environments. POCT-T can bridge the diagnostic and therapeutic gap where immediate cardiologic evaluation is unavailable.

Keywords: new technologies, cruise medicine, e-health

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Improving simplicity and safety for offshore energy workers: combining offshore and working at height assessments into one (NL) offshore medical standard

Sven J. Daam[1, 2], Walther D. Boon von Ochssée[2, 3], Lodewijk Reuser[2, 4]

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[2]ElementNL, The Hague
[3]Emergency Control Maritime Training
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ABSTRACT

Introduction: Offshore energy work today often includes not just the classic oil and gas sector, but increasingly includes work in offshore wind and working at height. The latest revised NL Offshore Medical Examination Standard (Version 5, to be implemented July 1st 2025) now also addresses the unique occupational health challenges in the rapidly growing offshore wind sector. Recent projections from the Global Wind Workforce Outlook 2023–2027 estimate a 79% growth in the offshore wind workforce by 2027. These figures underscore the necessity for updated medical assessments, particularly for personnel working at height. The new standard is accepted by NedZero (NL Wind) and G+ (UK Wind).

Methods: The new standard was developed by expanding the previous NOGEPA-ElementNL Standard 11. Data from the Global Wind Workforce Outlook 20232027, WindEurope European Stats 2024, and other sources provided insights into the specific physical demands and safety challenges of offshore wind operations. Clinical input from many occupational health experts was integrated. Based on these sources, modifications for evaluating working-at-height (WAH > 1.80 m) requirements were implemented.

Results: The revised medical standard includes the following updates:

1. Absolute Weight Limitations:

Fall arrest systems and personal protective fall equipment (PPFE) are designed to support a maximum load of 140 kg according to OSHA and ANSI. A maximum personal weight of 130 kg is advised — accounting for the employee's body weight, clothing, tools, and equipment — to ensure safety.

2. Combined Fitness Requirements for Working at Height:

Personnel must meet the NL Offshore Medical Standard for unrestricted offshore work and the criteria under 'Special Employment Groups' for the both the ERT Team and the Working at Height paragraphs. For most roles, the requirements for unlimited offshore work, combined with those for emergency response (including CA-EBS), are sufficient.

3. Certification of Fitness for Working at Height:

Following the medical examination, candidates whose duties include working at height, must have a specific "Fit for WAH" certification recorded in their Personal Safety Log Book and on their offshore certificate. This certification may also serve as confirmation of fitness for Emergency Response Team (ERT) duties.

4. Frequency of WAH Assessments:

Formal medical examinations for WAH are conducted every two years. For workers aged 50 and over, the validity of the WAH-specific certification is limited to one year, while the general offshore fitness certification remains valid for two years. This to align as much as possible to the G41 (DE-Wind) standard.

Discussion: These explicit modifications provide an objective framework for assessing the fitness of offshore wind personnel. The integration of defined weight limits, combined fitness requirements,

and tailored assessment frequencies ensures that the unique risks-especially those associated with working at height- are rigorously addressed. The substantial growth in offshore wind capacity and workforce emphasizes the critical need for these updated protocols.

Conclusions: The updated NL Offshore Medical Examination Standard (V5) delivers a robust, reproducible set of medical criteria, now also including the specific offshore wind sector requirements. By explicitly addressing these requirements for working at height through specific weight limitations, combined fitness assessments, and defined certification and re-examination intervals, the new standard supports improved worker safety and operational reliability. In an industry experiencing rapid growth, it also brings simplicity and interoperability for all involved: the industry, the medical examiners and the workers themselves.

Keywords: offshore energy, medical standard, wind energy, working at height

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Staying ahead of the tide: Novel vaccinations preventing infectious diseases at sea

Kirby Tong-Minh

TM Travel & Medical

ABSTRACT

Introduction: Seafarers face unique health challenges due to their demanding work environment, which can impact their immune systems. Factors such as prolonged periods at sea, isolation, exposure to various environmental stressors, and limited access to healthcare can weaken their natural defenses. The confined spaces on ships and close living quarters can also contribute to the rapid spread of infectious diseases, leading to potential outbreaks. Furthermore, the global nature of seafaring exposes individuals to diverse geographical regions with varying disease risks, particularly mosquito-borne illnesses prevalent in tropical and subtropical areas. While studies indicate a higher prevalence of overweight and certain lifestyle factors among seafarers, this abstract will focus on the role of weakened immunity, outbreak dynamics, and geographical risks in the context of novel vaccinations relevant to this population. The isolation and the limited possibilities for direct medical intervention on board increase the potential severity of infectious diseases.

An aging trend within the maritime workforce also means a larger proportion of seafarers are in age groups more susceptible to certain infections.

New vaccinations for seafarers

Shingles and Shingrix: Shingles, or herpes zoster, is caused by the reactivation of the varicella-zoster virus, with the risk increasing with age. Given the aging seafarer population, this poses a significant concern. The Shingrix vaccine, approved in the European Union (EU) in March 2018, is a non-live, recombinant vaccine that is highly effective in preventing shingles and postherpetic neuralgia (PHN) in adults aged 50 years and older. The primary vaccination schedule consists of two doses of 0.5 mL each administered with a 2-month interval.

Dengue and Qdenga: Dengue fever is a mosquito-borne viral infection prevalent in tropical and subtropical regions. While a first dengue infection typically causes mild to moderate illness, subsequent infections with a different serotype can lead to severe dengue, also known as dengue hemorrhagic fever or dengue shock syndrome. Seafarers frequently travel to dengue-endemic areas, increasing their risk of infection. The Qdenga vaccine was approved in the European Union in December 2022 for individuals aged four years and older. It has shown an overall efficacy of approximately 80% after 12 months. The vaccination course consists of two subcutaneous injections, given 3 months apart.

Chikungunya and Ixchiq: Chikungunya is a mosquito-borne disease causing fever and severe, potentially long-lasting joint pain. Outbreaks occur in many regions visited by seafarers. The chronic joint pain associated with chikungunya can significantly impair their physical abilities and lead to prolonged work incapacity. The Ixchiq vaccine received marketing authorization in Europe in 2025. Clinical trials demonstrated high seroresponse rates (≥ 96%) for at least 6 months after vaccination. Ixchiq is administered as a single injection.

Pneumococcal disease and Prevenar-20: Pneumococcal disease can lead to serious conditions like pneumonia, meningitis, and sepsis, with increased risk in older adults and those with underlying health issues. Older seafarers and those with chronic conditions are at higher risk of severe pneumococcal disease. Prevenar-20 was approved in the EU in February 2022 for adults and children aged 6 weeks and older. It protects against 20 serotypes of the pneumococcal bacterium, offering broader coverage than previous vaccines. In adults, Prevenar-20 is given as a single intramuscular injection.

Conclusions: Seafarers are particularly vulnerable to infectious diseases due to factors affecting their immune system, the potential for outbreaks in confined environments, and exposure to geographically diverse disease risks. The availability of new vaccines like Shingrix, Qdenga, Ixchiq, and Prevenar-20 represents a significant advancement in protecting this population against shingles, dengue, chikungunya, and pneumococcal disease.

Keywords: vaccinations, infectious diseases, prevention

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Monographs of the French Society of Maritime Medicine: methodology, topics and distribution

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[3]CRAPEM, St Nazaire
[4]Seafarers Health Department, Paris

ABSTRACT

Introduction: Ten years have passed since the publication of the French Treatise of Maritime Medicine. In order to continue spreading of the knowledge in maritime medicine the French Society of Maritime Medicine represented by experts decided to publish updated topics in its specific field.

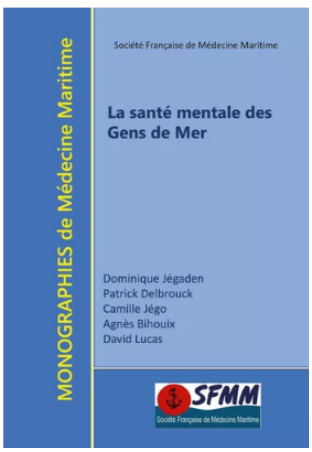
Methods: The methodology was the same for each topic. Firstly, the members of the French society agreed on the topic of interest that needed to be updated. Secondly, experts on the field were contacted to participate in the writing process.

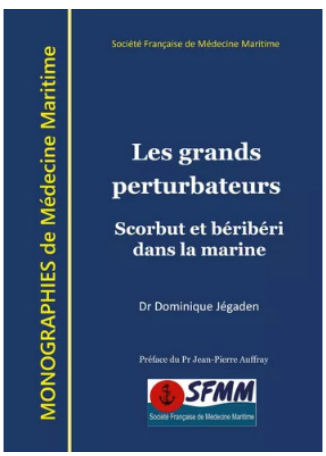
If one declined, another was contacted. Once the task was completed, every author was in charge of writing their assigned part of the topic based on a literature review. The schedule of the process was previously determined. Thirdly, the coordinator of the writing process compiled the different parts of the manuscript. Then, a reading committee from the French Society reviewed the manuscript and asked for modifications if necessary.

Results: Four monographs were written. The first is dedicated to the mental health of seafarers. The second examines the impacts of scurvy and beri-beri in maritime history. The third focuses on sea sickness. The last is more of a guideline than a monograph because it provides a method for health risk assessment during an embarked period or a stay in remote maritime location.

Conclusions: There are many ways to spread knowledge in the maritime health field, such as publications in specific scientific journals or the creation of e-books available online. We think that publishing periodically updated topics as monographs could also represent a good alternative.

Keywords: mental, physical, health, maritime, monograph





Dental and periodontal findings in seafarers: A single-center retrospective study in Bangkok, Thailand

Sirada Chaichanachuchird, Narissara Temvanich, Atipong Sujiratana, Hansa Premmaneesakul

Maritime Medicine Residency Training Institute, Naval Medical Department, Bangkok, Thailand

ABSTRACT

Introduction: Dental problems are common among seafarers due to unique environmental, occupational, and lifestyle factors that may impact their dental health. This study aims to assess the prevalence of dental and periodontal problems among Thai seafarers.

Material and methods: A cross-sectional study was conducted among 602 Thai seafarers who received oral health assessments and were subsequently categorized based on Dental Readiness Classification (DRC) at Somdech Phra Pinklao Hospital from November 2021 to October 2023.

Results: The prevalence of dental caries among seafarers was 43.5% with significant differences in the number of dental caries between officers and non-officers ($p < 0.0001$). The mean (SD) of decayed, missing, and filled teeth were 1.2 (± 2.0), 2.9 (± 3.3), and 1.6 ± (2.8), respectively. About fifty percent of the seafarers were categorized as DRC 1, 44.9% as DRC 2, and 5.3% as DRC 3. Dental findings indicated that non-officers were significantly more likely to be dentally unfit compared to officers (AOR = 2.179, 95% CI: 1.396–3.402). Dental scaling was the most required treatment, needed by 70.1% of the study population.

Discussion: Seafarers' limited access to dental care at sea makes preventive oral health management critical. The study found a significantly higher prevalence of dental issues among non-officers, which may be linked to lower socioeconomic status, limited dental care access, and poorer hygiene habits. The findings emphasize the necessity of mandatory pre-boarding dental screenings and the potential for telemedicine consultations for seafarers to address dental issues remotely. Additionally, lifestyle factors such as smoking and alcohol consumption were prevalent among seafarers, potentially contributing to poor oral health. Raising awareness through educational programs and integrating preventive dental care into maritime medical protocols could improve oral health outcomes.

Conclusions: High rates of dental caries and periodontal disease were found among seafarers. Incorporating comprehensive dental assessments into pre-boarding fitness evaluations for seafarers can help reduce the likelihood of dental emergencies while at sea.

Keywords: oral health, periodontal diseases, seafarer, dental caries, occupational health

Table 1. Dental and periodontal findings in seafarers

	Officer n = 213 (%)	Non-officer n = 389 (%)	Total n = 602 (%)	P-value
Dental caries				
Absent	150 (70.4%)	190 (48.4%)	340 (56.5%)	**< 0.001***
Present	63 (29.6%)	199 (51.6%)	262 (43.5%)	
Periodontal findings				
Normal	125 (55.7%)	137 (35.2%)	262 (43.50%)	**< 0.001***
Calculus	65 (30.5%)	191 (49.1%)	256 (42.50%)	**< 0.001***
Gingivitis	29 (13.6%)	79 (20.3%)	108 (17.90%)	**0.0405***
General periodontitis	3 (1.4%)	12 (3.1%)	15 (2.50%)	0.201
Localized periodontitis	1 (0.5%)	3 (0.8%)	4 (0.70%)	0.672

All values are expressed as frequency with percentages (in parentheses). Chi-square was used to test the statistical difference of periodontal findings between officers and non-officers; *$p \leq 0.05$ is considered statistically significant

Table 2. Treatment needs of officers and non-officers

Treatment needs	Officers n = 213 (%)	Non-officers n = 389 (%)	Total n = 602 (%)
Required Treatment	125 (58.7%)	297 (76.3%)	422 (70.1%)
• Dental Scaling	87 (40.8%)	236 (60.7%)	323 (53.7%)
• Root Planing	3 (1.4%)	8 (2.1%)	11 (1.8%)
• Root canal treatment	3 (1.4%)	6 (1.5%)	9 (1.5%)
• One surface filling	22 (10.3%)	50 (12.9%)	72 (12%)
• Two or more surface filing	32 (15%)	119 (30.6%)	151 (25.1%)
• Extraction	34 (16%)	134 (34.4%)	168 (27.9%)
— Third molars	29 (13.6%)	112 (28.8%)	141 (23.4%)

Overweight and obesity a major health risk among Greek seafarers and the need for proactive monitoring

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[1]Health4Crew
[2]Maritime Health, Chronic Diseases, Preventive Medicine

ABSTRACT

Introduction: Overweight and obesity have become significant health risks in various working populations, including seafarers. This study investigates the prevalence of overweight and obesity among Greek seafarers and their association with dyslipidemia, as well as the impact of age, gender, and role (officer vs. non-officer) on BMI. It emphasizes the importance of proactive monitoring to address these health risks, with a particular focus on the correlation between BMI and the prevalence of dyslipidemia.

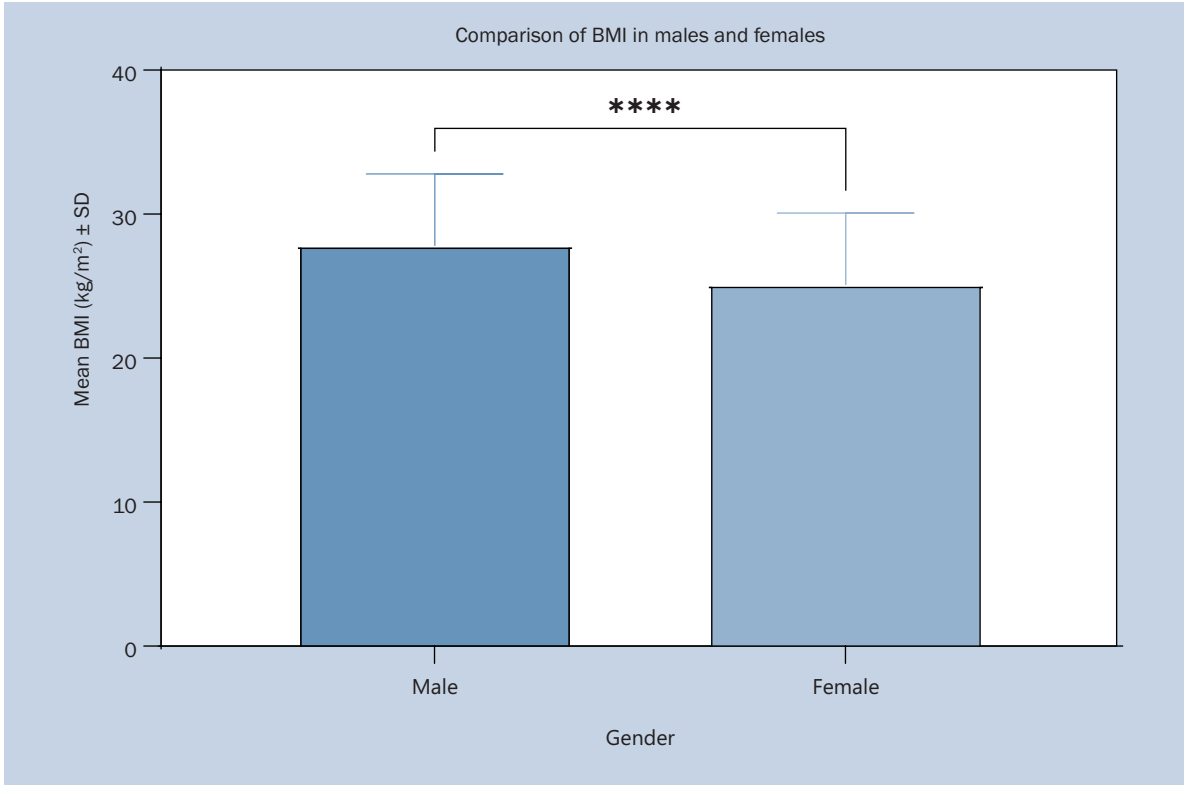
Methods: A cohort of 4,625 Greek seafarers was analyzed using descriptive statistics and Pearson correlation to examine the relationship between BMI, dyslipidemia, and age. Unpaired t-tests, F-tests, and Pearson correlation coefficients were used to compare BMI across different genders and roles (officers and non-officers). BMI was correlated with dyslipidemia, and the relationship between BMI and age was examined.

Results:

1. Gender Comparison: The study found that males (n = 4,000) had a significantly higher mean BMI (27.82) than females (n = 625), whose mean BMI was 25.12 ($p < 0.0001$). The mean difference was -2.70, and the R-squared value was 0.01799, suggesting a small proportion of variation in BMI explained by gender. The F-test for variance comparison indicated no significant differences between male and female BMI variability ($p = 0.9323$).
2. Officers' vs Non-Officers: Officers (e.g., Master, Chief Officer, Chief Engineer) had a significantly higher mean BMI (29.75) compared to non-officers (26.83, $p < 0.0001$), with a mean difference of -2.92. The R-squared value for this comparison was 0.06791, indicating that the role of seafarers (officer vs non-officer) explains more of the variation in BMI than gender.
3. BMI and age relationship: A Pearson correlation was performed to assess the relationship between BMI and age among the seafarers. The correlation coefficient ($r = 0.3212$) with a p-value of < 0.0001 indicated a statistically significant positive correlation between BMI and age. The R-squared value of 0.1031 suggests that approximately 10.3% of the variance in BMI can be explained by age. The regression equation ($Y = 0.1696 * X + 22.50$) indicated a positive trend where BMI increases with age.
4. BMI and dyslipidemia: The study also found a significant positive correlation ($r = 0.3212$, $p < 0.0001$) between BMI and the likelihood of dyslipidemia. The regression equation ($Y = 0.1696 * X + 22.50$) with an R-squared value of 0.1031 suggests that BMI is a significant predictor of dyslipidemia, though other factors may also contribute to its development.

Conclusions: The study highlights that overweight and obesity are major health risks among Greek seafarers, with a significant correlation between BMI and the likelihood of dyslipidemia. Officers have a higher BMI than non-officers, and both BMI and age are correlated with the prevalence of dyslipidemia. Given the strong association between obesity and health conditions such as dyslipidemia, the study emphasizes the need for proactive monitoring and health interventions on ships to mitigate these risks. Future research should explore lifestyle factors and the effectiveness of health monitoring programs for seafarers to reduce the long-term impact of overweight and obesity on their health.

Keywords: obesity, overweight, seafarer health, proactive monitoring


Comparison of BMI in males and females
Mean BMI (kg/m²) ± SD
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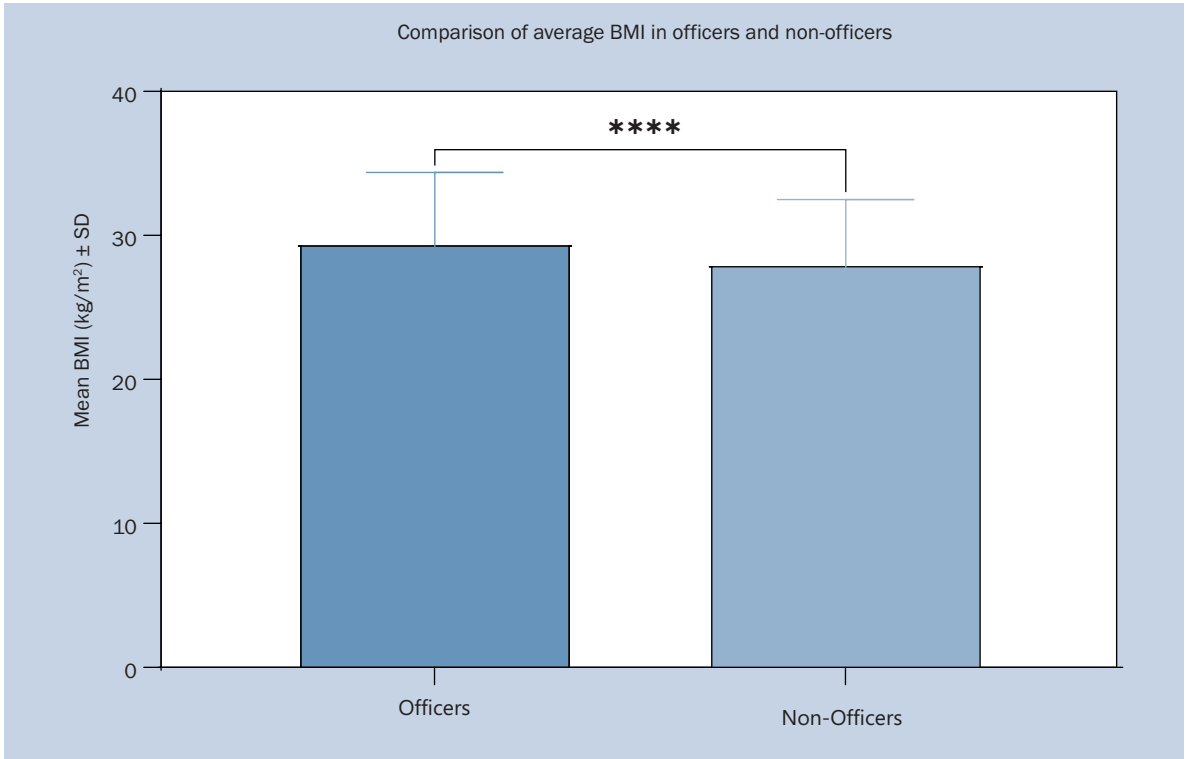
Comparison of average BMI in officers and non-officers
Mean BMI (kg/m²) ± SD
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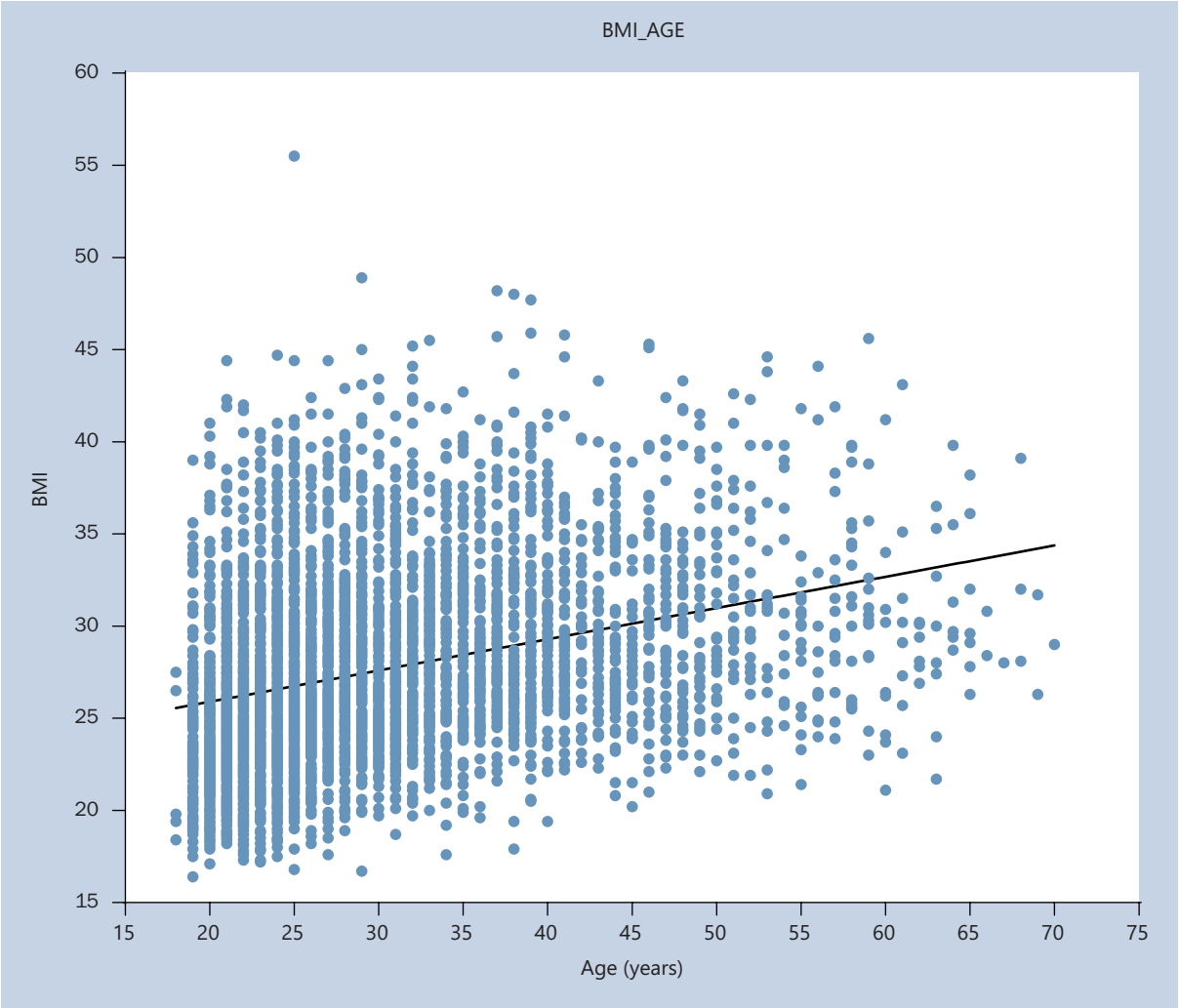
Officers
Non-Officers


BMI_AGE
BMI
Age (years)
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The knowledge base for maritime health: 2011–2025

Tim Carter

IMHF Expert Panel, International Maritime Health Foundation

ABSTRACT

Introduction: The mission of the International Maritime Health Foundation (IMHF) is to secure the scientific underpinning for maritime health practice, notably by the publication of *International Maritime Health* (IMH), organising expert workshops on maritime health topics, and managing a portal that provides public access to information on relevant developments.

Methods: Key to all these activities is the state of knowledge on risks ("What matters?"), control measures ("What works?") and the context for health issues for the maritime sector ("Who cares?"). A study addressing these questions was published in IMH in 2011. This paper examines how the knowledge base has changed since then, looking at examples such as fatigue, crew interrelationships, repatriation data and colour vision assessment.

Results: Most of the 2011 study focused on mortality and morbidity studies and the performance requirements for working at sea. Such studies have continued to be published, but there have been a number of important new directions: psychological well-being has become a far more prominent topic; major infections (Ebola, Zika, COVID-19) have had implications for seafaring and have led to consensus views on how best to respond; bibliometric investigations have shown where research is active and how findings have been used. Expert workshops organised by IMHF and IMHA have made recommendations using the, often limited, knowledge base to propose improvements in practice.

Conclusions: The biggest gap has been in relation to "Who cares?" Investigations and recommendations solely relating to maritime health practitioners have led to significant improvements in care. However, few have reached a wider audience or caused major changes in health care where improvements depend on actions by the wider maritime industry. Similarly, funds for investigative work have only been made available from a limited range of charitable bodies rather than being recognised as a necessary expenditure for the whole maritime industry. How new strategies can be developed to remedy this will be considered.

Keywords: maritime medicine, knowledge base, strategies

Expanding maritime health communication: The IMH Magazine & Maritime Health Portal

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ABSTRACT

Introduction: The dissemination of maritime health knowledge has traditionally been confined to scientific audiences, limiting accessibility for seafarers and industry professionals. To address this gap, the IMH Magazine was introduced in 2023 as an extension of the IMH Journal to bridge the gap between scientific research and practical application. It publishes industry-relevant articles and news, medical case studies, regulatory updates, and continuing medical education (CME) content, therefore providing non-scientific but essential content to a broader maritime audience. The launch of the IMHF Maritime Health Portal in January 2024 further enhanced accessibility by offering a dynamic digital platform for maritime health updates, discussions, and continuing professional education.

Methods: This presentation draws upon an analysis of historical contributions of the Magazine section of the IMH Journal and the Maritime Health Portal, examining how outcomes from their implementation have helped improve communication within the maritime community.

Results: The IMH Journal has played a significant role in sharing medical research that informs practitioners about emerging challenges and solutions in maritime health. Since its inception, the IMH Magazine has successfully published eight issues between 2023 and 2024, demonstrating a strong engagement with a wider audience. The IMHF Maritime Health Portal has enhanced information accessibility, with its news section and PDF-based magazine reaching seafarers, maritime medical professionals, and welfare organizations. The integration of IMHA members into the editorial and review processes has further improved content relevance and credibility. The platform's social media expansion has broadened its outreach, fostering greater participation in maritime health discussions.

Discussion: The success of the Magazine and Health Portal highlights the demand for accessible maritime health information beyond traditional academic publishing. The initiative has contributed to improving knowledge-sharing and professional development within the maritime sector. The transition to digital platforms has enabled real-time updates, interactive discussions, and wider dissemination of health-related insights. The next phase focuses on ensuring sustainability through commercial opportunities and strategic marketing initiatives.

Conclusions: The IMH Magazine and Maritime Health Portal mark a transformative step in maritime health communication, bridging the divide between research and real-world application. Their continued development will depend on active community participation, strategic partnerships, and sustainable funding models. By leveraging digital tools and collaborative efforts, maritime health professionals can remain informed, connected, and equipped to address the evolving challenges of healthcare at sea.

Keywords: journal, symposia, medical, seafarer

An online course in health research methodology for students and maritime medical doctors

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ABSTRACT

Introduction: There is an increasing need for all academic professionals to have competencies in research methods and evidence-based practice. This is essential, both for the planning and writing of their graduate and doctoral theses and for using the scientific literature in their professional life by contributing with their own research. The course provides training on how to carry out small cross-sectional studies based on questionnaires or clinical data and conduct small review studies.

Methods: The course is divided into three modules. The students will learn how to plan a study, collect and analyze data, apply scientific literature in the introduction and discussion to prepare a scientific manuscript including the introduction, methods, results, discussion, and the references. The course will provide the students with guidance on preparing their thesis according to international standards, similar to those used in scientific articles. In this way, students will be well prepared to advance with their own research ideas and apply scientific knowledge in their professional life. The students include nurses, medical students and medical doctors. Databases for exercises are available. Preferably the course is conducted as online group work with 2–3 participants per group. The study time will 70 hours over 7 weeks for each module. Total study time is estimated at 210 hours over 6 months in total. At the end of the course when a draft research protocol or draft manuscript for an article is ready, a certificate is issued indicating the skills acquired by each participant, who signs a declaration confirming significant participation in all phases of the project.

Results: Acquired competencies — expected outcomes: Ability to conduct minor research projects, Systematic search of scientific literature, Effective communication of literature findings and study results, Preparation of a paper at an international scientific level, Production of a thesis or an article in a standardized scientific format.

Discussion: This course represents the first experience in establishing research methods training for maritime medical doctors. There is a huge difference in teaching health research methodology globally, which highlights inequity in relation to the UN Sustainable Development Goal 17 (UN17) goals. Global collaboration in health research methodology education is needed to achieve equity in health science education. The aim is to reduce global health inequities by strengthening the education in health science research methodology. An open-access educational program for health science research methodology is essential to support the UN17 goals. The modules form the foundation of research methodology education for public- and occupational health. Expanding global education in health research methodology is necessary to eliminate inequities in global health. The course materials are free to use. At the end of the course when a draft research protocol or manuscript for an article is ready, a certificate is issued indicating the skills acquired by each participant.

Keywords: maritime medicine, research methods, training

International Maritime Health Foundation — A platform for building science and cooperation in maritime heath

Nebojša Nikolić

International Maritime Health Foundation

ABSTRACT

Introduction: The International Maritime Health Foundation (IMHF) was founded in 2018 by the Polish Society of Maritime, Tropical and Travel Medicine, the Norwegian Association for Maritime Medicine, and the Norwegian Centre for Maritime and Diving Medicine. The organisation was established to create and support a sustainable base for the only international journal dedicated to the health of people working at sea — International Maritime Health (IMH). Its goal is to act for the development of science, to increase and disseminate knowledge of maritime medicine and related fields, and to support and initiate scientific and research activities worldwide in the field of maritime medicine.

Methods: The achievements and impact of IMHF's activities over the five-year period, including the analysis of citations, the organisation's structure, development and projects, as well as IMHF consensus documents on various topics, are presented.

Results: Based on the Journal Citation Report (JCR) for 2024, IMH received an Impact Factor of 1,6, reflecting its strong standing in the field. The JCR Journal Performance Data shows that the journal is primarily cited by non-medical journals within the maritime industry, indicating its growing influence in the field.

Conclusions: IMHF has become an important source of maritime knowledge for the shipping industry. There is a need for closer cooperation between experts in maritime medicine and industry on an individual basis. Universities, academies, organisations, associations, societies and companies that share the aims and objectives of IMHF are invited to participate in such cooperation.

Keywords: maritime medicine, foundation, collaboration

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Psychosocial risks on board and their impact on operational safety

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ABSTRACT

Introduction: The maritime industry presents unique occupational challenges, notably psychosocial risks that affect seafarers' mental well-being, job satisfaction, and overall performance. These risks not only influence psychological health but also have significant implications for physical health, potentially leading to fatigue, musculoskeletal disorders, and cardiovascular issues. This study aims to identify key psychosocial risks among seafarers, analyze their perceptions of workplace conditions, and provide evidence-based recommendations to enhance both mental and physical health on board.

Methods: Utilizing the IMEQ Psychosocial Risk Assessment Platform, a structured tool for evaluating seafarers' well-being, workload, stressors, and job engagement, we conducted assessments across various vessel types, including tankers, cargo ships, LNG carriers, and bulk carriers. The assessment, designed to take approximately 15 minutes, was implemented on 41 vessels, involving 593 seafarers. It evaluated 20 psychosocial stressors, such as workload balance, job control, management support, peer support, workplace relationships, and psychological safety.

Results: Overall, 85.17% of seafarers reported a low-risk psychosocial work environment, with 82.81% indicating strong mental resilience. However, moderate to high risks were identified in categories like workload balance, financial security, and job control, with ratings being particularly affected. Ratings experienced higher workload pressures and financial concerns compared to officers. Psychological safety was generally high, with minimal reports of bullying or harassment on board.

Discussion: The analysis revealed significant differences in psychosocial risks between officers and ratings. Compared to officers, ratings were more likely to experience higher levels of burnout risk, workload pressures, and financial insecurity. These psychosocial stressors have direct implications for physical health:

- Fatigue: High workload pressures and extended working hours can lead to chronic fatigue, impairing cognitive and physical performance and increasing the risk of accidents.
- Musculoskeletal Disorders: Repetitive tasks and inadequate rest periods contribute to musculoskeletal injuries, affecting mobility and quality of life.
- Cardiovascular Issues: Chronic stress associated with financial insecurity and high job demands can elevate blood pressure and increase the risk of cardiovascular events.

Addressing these issues requires targeted interventions:

1. Workload Distribution and Fatigue Management: Implement fair shift rotations and monitor workload strain to prevent fatigue-related stress.
2. Career Development for Ratings: Introduce structured skill enhancement programs and clear promotion pathways to improve job satisfaction and reduce stress.
3. Financial Security Initiatives: Offer financial literacy training and conduct salary structure reviews to alleviate financial concerns among ratings.
4. Psychological and Physical Health Support: Increase leadership engagement, establish confidential reporting systems, and promote diversity and inclusion to enhance psychological safety.

Conclusions: Addressing psychosocial risks is crucial for improving seafarer welfare and operational safety. Integrating mental and physical health support through targeted interventions can foster a supportive and balanced work environment, enhancing both mental and physical well-being among seafarers.

Keywords: psychosocial risks, seafarer health, operational safety

Expanded key findings by category

Category	Score (%)	Risk Level	Observations
Workload Balance	66.39	Moderate Risk	High workload pressure and tight deadlines were reported
Job Control	74.58	Low Risk	Some autonomy limitations were noted
Management Support	83.13	No Risk	Strong supervisor support reported
Peer Support	88.24	No Risk	High levels of teamwork and cooperation
Workplace Relationships	86.86	Low Risk	Few tensions and conflicts noted
Role Clarity	96.39	No Risk	Seafarers had a strong understanding of job roles
Organizational Support	85.78	No Risk	Good company policies for mental health and well-being
Job Engagement	93.2	No Risk	High job satisfaction and commitment
Burnout Risk	20.72	Low Risk	Limited burnout cases, but signs of fatigue
Mood	11.76	Low Risk	Minimal signs of negative mood among seafarers
Anxiety	6.46	No Risk	Anxiety levels were very low
Job Prospects & Development	91.01	No Risk	Seafarers felt supported in career development
Financial Security	79.47	Moderate Risk	Some concerns about financial stress were noted
Psychological Safe Interactions	95.88	No Risk	Low reports of bullying and harassment onboard
Civility & Respect	87.27	No Risk	Respect and positive interactions were maintained
Physical Environment & Facilities	83.67	Low Risk	General satisfaction with onboard facilities
Physical & Equipment Safety	87.06	No Risk	Seafarers felt safe with equipment and safety measures
Organizational Culture	88.13	No Risk	The company maintains a strong positive culture
Personal Well-Being	86.44	No Risk	High levels of personal well-being were reported
Change Management	83.68	No Risk	Changes were communicated effectively to seafarers

Quality of life, well-being and job satisfaction of people working at sea: Analysis of working conditions pre and post Covid-19 pandemic

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Medical University of Gdańsk, Division of Occupational, Metabolic and Internal Diseases

ABSTRACT

Introduction: Work at sea is a highly demanding occupation due to challenging environmental conditions, the nature of the work, psychosocial risks as well as the global political situation.

During the COVID-19 pandemic, new difficulties for seafarers emerged in the working environment impacting their general well-being as well as their quality of life at sea. Despite the stabilization of the epidemiological situation and the withdrawal of restrictions related to COVID-19, many seafarers report that employers have not returned to previous work standards. This is reflected in the Seafarers' Happiness Index, which has recently been declining from quarter to quarter, as well as in ISWAN data concerning mental health.

Aim: The aim of the study is to assess the quality of life, mental and physical well-being and job satisfaction of people working at sea.

Additionally, we plan to compare the quality of life and work standards data obtained in the current research with similar studies conducted by our team between 2011 and 2014, which involved 1,700 seafarers employed in the Polish fleet and on foreign-flag vessels.

Methods: Following methods were applied:

WHOQOL-BREF — a Polish version of the WHO questionnaire assessing quality of life (QoL) in 4 areas: physical, psychological, social, environmental; "Survey for People Working at Sea" — developed specifically for the study. The study group consisted of 50 seafarers who underwent pre-embarkation medical examination at the University Centre of Maritime and Tropical Medicine in Gdynia, Poland.

Results: The results showed that the quality of life among Polish seafarers was quite high before the pandemic. However, in another study conducted in our center, around 71% of the surveyed sailors reported that their work environment was not conducive to health, in contrast to their home environment. Data from the latest phase of the study is still being analyzed.

Conclusions: Quality of life and work standards are strongly connected to stress and workload, which are known factors contributing to the occurrence of lifestyle diseases, in particular cardiovascular diseases.

Keywords: quality of life, COVID-19, working conditions

Airborne pathogen monitoring and ventilation assessment on passenger ships

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Global Centre for Clean Air Research (GCARE), Department of Civil and Environmental Engineering, Faculty of Engineering and Physical Sciences, University of Surrey

ABSTRACT

Large passenger ships with enclosed, crowded spaces and frequent interactions between travellers are confirmed to provide conditions that facilitate disease transmission (Abe et al., 2022; Althouse et al., 2020). The COVID-19 pandemic demonstrated a profound inability of existing passenger ship policies to detect and address newly developing diseases. To enhance passenger safety and experience, and to prepare the shipping for future pandemics, this research conducted two separate studies: a systematic literature review (Kumar et al., 2025) and localised CO_2 monitoring (Cheung et al., 2025). The goal is to achieve a comprehensive understanding of indoor environmental quality, ventilation conditions and aerosol dispersion on board passenger ships.

The first study is a systematic literature review, conducted following the PRISMA approach to identify relevant literature. The search was developed to (i) examine typical concentrations of airborne aerosols and ventilation parameters on board, along with the instruments used for monitoring; (ii) assess existing methods for understanding infectious risk, including the availability of information on tracer transport mechanisms and aerosol dispersion. The review suggests that future studies should focus on obtaining airborne aerosol dispersion data under controlled experimental conditions and real-world shipboard environmental parameters, which are suitable for the development of a framework for a diverse range of passenger ship environments. Additionally, more research is needed to expand the database across various indoor and ambient conditions.

This second study involved ship-based CO_2 mapping in mass gathering locations, conducted on board an operating cruise ship with over 5,000 passengers. The localised CO_2 mapping aims to investigate ventilation conditions, dispersion mechanisms, and identify the risk of transmission of airborne disease in various spaces on the ship. This supports the analysis of appropriate and actionable recommendations on prevention, mitigation and management procedures (including ventilation operation) for the cruise industry. Indoor air quality monitoring was conducted in nine environments (three cabins, buffet, gym, bar, restaurant, pub, and theatre). CO_2 concentrations, temperature, and relative humidity were continuously monitored to investigate thermal characteristics and ventilation performance over significant time periods. Results show that the probability of airborne infection transmission during normal speaking conditions to be very low (< 3%). However, in higher occupancy areas where voices are raised to be heard (dining areas and social settings at peak times), CO_2 levels increased, suggesting additional mitigation measures are necessary. The study also identified challenges from port emissions impacting indoor air quality (IAQ) on board the cruise ship, with elevated ambient CO_2 levels in berths. Dining areas were particularly susceptible to outdoor pollutants due to their proximity to open spaces and high occupancy. Despite stable air conditioning during docking, ventilation systems struggled to fully mitigate pollution from outdoor sources, highlighting the need for better filtration and adaptive ventilation both at sea and in port. Data from the controlled condition experiment is currently being analysed. This study lays the groundwork for further exploration and provides practical recommendations for the optimisation of ventilation operations on passenger ships. This comprehensive analysis aims to contribute to creating a healthy/safe sailing environment and building resilience for future pandemics.

ACKNOWLEDGEMENTS

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Provision of SAR and TMAS — National variation and establishing best practice

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[2]UK Maritime and Coastguard Agency, UK

ABSTRACT

Introduction: The provision of effective telemedical advice services (TMAS) is regulated under international maritime law, including the SOLAS Convention (Safety of Life at Sea), the Maritime Labour Convention 2006 and EU regulations. Each country has developed its own system to ensure the efficient delivery of remote maritime medical advice, tailored to its national framework and operational capabilities. To promote best practice and explore the future of national telemedical services within the United Kingdom, the Maritime and Coastguard Agency (MCA) sought feedback from the international search and rescue (SAR) community. These results are shared to encourage a discussion on the findings and ways of improvement.

Methods: A survey to gather this feedback was devised to assess the structure, funding, workload and challenges of TMAS and Search and Rescue (SAR) services across various regions. Questions covered aspects of government provision, departmental structure, doctor qualifications, workload, training, medical guidance, integration with SAR and overarching strategic goals.

Results: Responses were received from multiple government agencies and organisations involved in maritime telemedical assistance. All respondents confirmed that their governments provide and fund SAR services, demonstrating universal support. However, only a portion of respondents indicated that TMAS services receive government funding. TMAS operational oversight varied with 50% of services based within hospitals, predominantly under emergency departments. TMAS doctors possess diverse qualifications and undergo a variety of both pre-employment and continuous training. Most doctors (11 of 14) had additional clinical responsibilities beyond TMAS duties. Additionally 12 of 14 respondents confirmed that national or international medical guides were used to provide medical advice. Access to guides varied and was not standardised.

The majority of TMAS Doctors responded that they were aware of flag state medicine chests, aiding in resource-based decision-making. Reporting practices were inconsistent across the respondents with some delivering annual reports and others not completing formal documentation processes.

Some countries have TMAS as the first contact point and others rely on SAR. Communication methods are primarily via phone, with radio and email also used, video communication is rare. Challenges highlighted were resource constraints, coordination difficulties and technology. Future strategies included focusing on improving staffing and integrating advanced technology.

Discussion: The findings showed a very variable approach to the delivery of TMAS and SAR services internationally. Government support for SAR is consistent but TMAS funding differs. The variation in operational models, medical guide access, and training highlights an opportunity to review further to highlight best practice. There were areas that can be highlighted for further discussion:

- Training for TMAS Doctors and their potential involvement with the training of others,
- The use of different medical guides,
- Reporting,
- Successful approaches — long-standing services, effective SAR coordination, use of standardised check sheets and quick response cards,
- Challenges — language barriers, technology failures.

Conclusions: TMAS and SAR services play critical roles in maritime safety. Disparities in funding, training, data utilisation can impact efficiency. Addressing these challenges through effective procedures, robust technology, and the collaboration and sharing of best practice will strengthen maritime medical response capabilities.

Keywords: TMAS, SAR, service delivery

Psychological First Response by “those we know”. Mental health of seafarers — the contribution of welfare providers in daily life and in crises

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Deutsche Seemannsmission

ABSTRACT

Introduction: This is a field report about the mental health situation of seafarers on merchant vessels (cargo and cruise) and the support provided to their mental health in daily life and especially after stressful events by seafarers’ welfare organizations. This report aims to highlight how unique the situation of seafarers is and why support from people who are close to their own lifeworld provides a better form of low-threshold support for their mental health.

Methods: The report is based on statistics related to interventions and concrete accounts of interventions, as well as preliminary results of interviews with psychosocial experts.

Results: The report shows the variety of stressful incidents after which Psychosocial First Response is offered to seafarers and suggests that a link to the mental health and practical assistance in ‘normal’ seafarers’ welfare is helpful to gain access and acceptance by seafarers after stressful incidents. Additionally, a professionalization of port chaplains and ship visitors in the field of Psycho Social First Response and a coordinated network, enables a much more effective assistance with greater acceptance by seafarers and the maritime industry.

Discussion: Seafarers on merchant vessels usually live and work on board their ships for several months, far away from family and other social contacts. Living and working on board exposes them to a high level of physical and mental stress. They experience constant noise and vibrations, long working hours with short rest periods, night shifts, alarms and drills, high workloads, and multicultural environments on board. Additionally, when calling at ports, they are not treated as human beings.

With an already high level of stress and limited opportunities to relieve it, seafarers have a lower tolerance for high-stress incidents. Stressful incidents can include fire on board, severe storms, sudden death of a fellow crew member, attacks by pirates or in war zones, serious resulting in injuries or life threatening situations.

Seafarers’ Mental Health requires a holistic approach, as they live in a unique, isolated environment. Port welfare workers like chaplains and social workers have a key role as “those who come on board and ask ‘How are you? ’” They are sufficiently integrated in the world of the seafarers to be trusted. This trust enables low-threshold support for mental health in seafarers’ daily life and especially after stressful incidents. The Deutsche Seemannsmission has trained more than 40 welfare workers in crisis intervention using an internationally recognized method based on CISM and has created a coordination network.

Conclusions: The combination of skilled welfare workers who are close to the reality of seafarers and specially trained for Psychosocial First Response is already yielding good results. The network is sufficiently large to offer assistance even in events involving a higher number of affected seafarers or those in different places after evacuation from the vessel.

In the future a larger European or even global network could be developed with common criteria for qualification and organization. Additionally, there is a growing awareness in the maritime industry about the importance of support for seafarers’ mental health in everyday life on board and in ports, especially after stressful incidents.

Keywords: well-being, gender and culture, mental health

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Guidelines on the Medical Examination of Seafarers — the need for change

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ABSTRACT

Introduction: The need for a review of Appendix E of the ILO/IMO Guidelines on the Medical Examination of Seafarers was highlighted at ISMH16 in Athens and supported by the Record of Proceedings of the Joint ILO–IMO meeting to adopt guidelines on the Medical Examination of Fishers/Fishing Vessel Personnel in February 2024. The current Guidelines were published in 2013 and there have been significant changes in the management of some diseases since then. As a result, some seafarers may not be considered fit to work at sea even when the actual risk of illness or injury is now deemed acceptable.

Methods: A survey was conducted within the maritime industry to gather comments from any interested parties on whether each of the medical conditions in Appendix E required change, discussion or no action. In addition, opinion was sought as to any other conditions that needed to be added. Appendices A – D were also included in the survey. The results were discussed at a workshop in February 2025 that brought together experts from various sectors of the maritime medical field, including regulatory bodies, academic institutions, and practicing physicians. Participants discussed evolving medical conditions, advancements in treatments, and the practical application of medical guidelines in the unique environment of seafaring.

Results: A total of 113 responses to the survey were received from respondents in 27 countries. Of these, 43% of surveys were completed in full. Most were answered by seafarers' doctors, but other groups included seafarers and their organisations, regulators, ship owners and TMAS providers. On initial review there were only three medical conditions that more than 50% of respondents to that question felt needed discussion or change. For most conditions 20–50% of respondents supported review or change. At the other end of the spectrum there were ten conditions where less than 20% of respondents felt the need for change or discussion. Discussion at the workshop demonstrated the desire for additional information on the current recommended treatment regimens for several conditions, the risk of associated medical complications and the likelihood of side effects of more recently available medications.

Discussion: Further work is required to analyse the results of the survey in greater detail and agree the threshold level for further action. The development of new technologies and the different side effect profiles of current treatments mean that the management of many chronic medical conditions is much improved since the current Guidelines were published 12 years ago.

The consensus of the workshop was that there is a definite need to review Appendix E, and other related Appendices, to ensure that the Guidelines are based on the most up to date information.

Conclusions: With the rapid pace of medical advancements, the maritime industry has an opportunity to future-proof its medical fitness criteria, ensuring that seafarers are both healthy and supported throughout their careers. Input from additional sectors of the industry is required and consensus must be achieved between all interested parties. Implementing changes to the Guidelines will require tripartite agreement of governments, workers and employers through the UN agencies.

Keywords: guidelines, medical, fitness to work

Figure 1. Medical conditions considered to need change or discussion by over 50% of respondents to that question

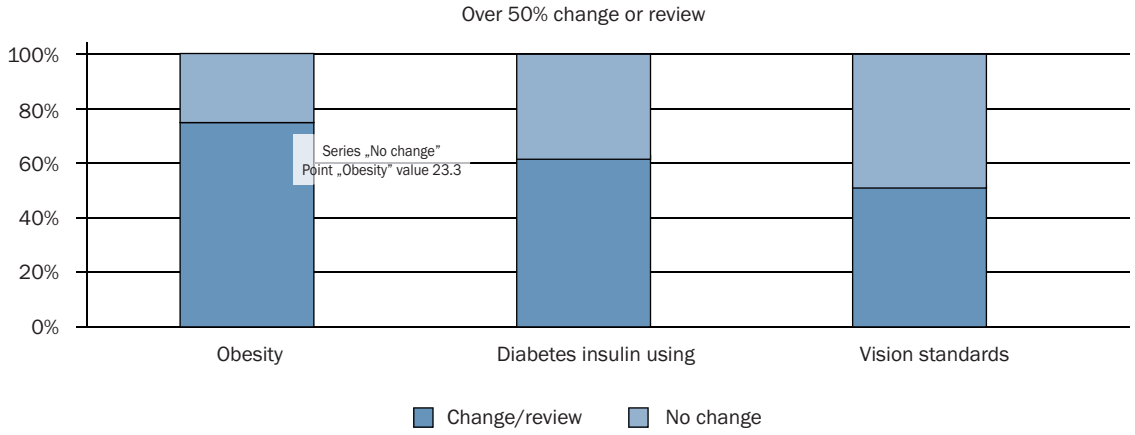


Figure 2. Medical conditions considered to need change or discussion by 40.1–50% of respondents to that question

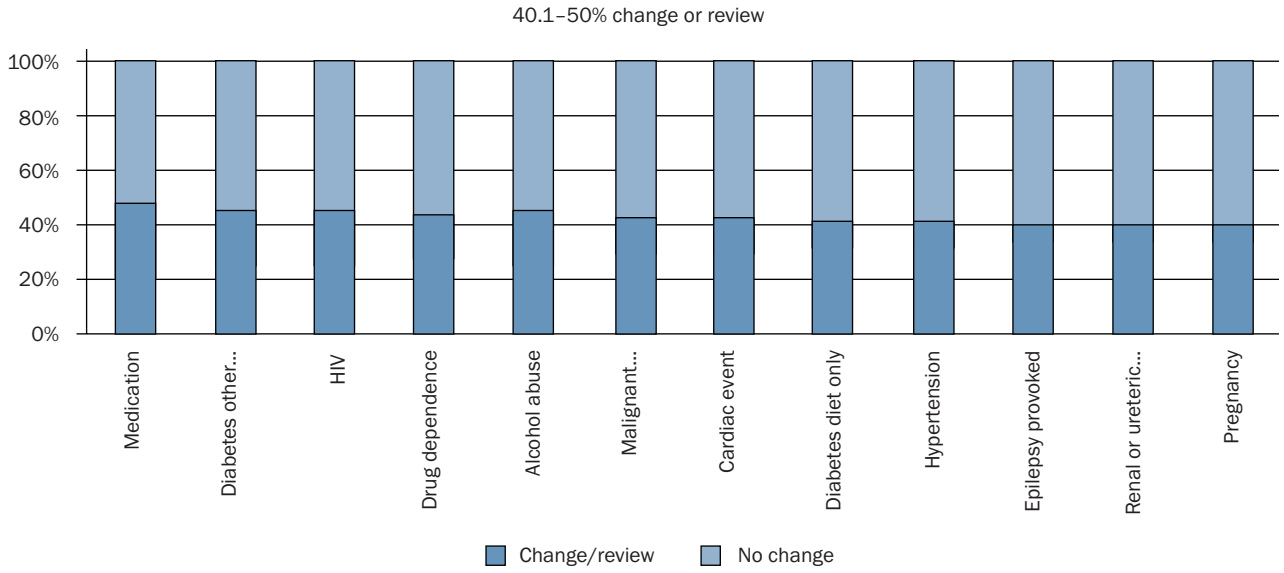
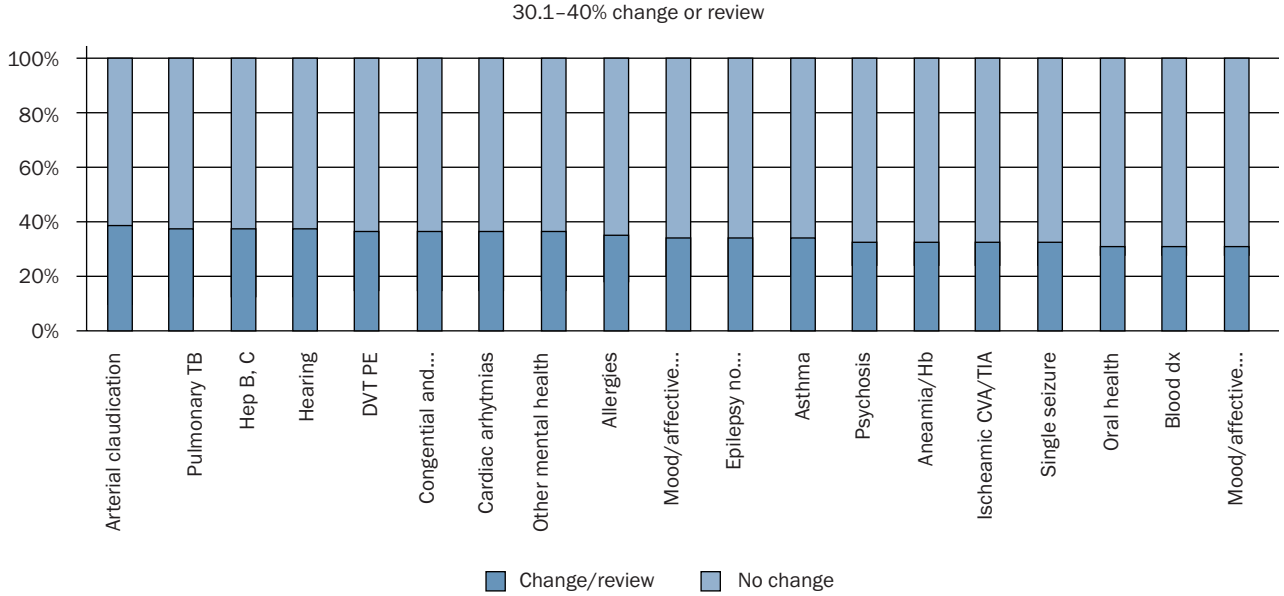


Figure 3. Medical conditions considered to need change or discussion by 30.1–40% of respondents to that question



Infection distribution and anti-infective need aboard commercial ships

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ABSTRACT

Introduction: Ships subject to the International Labor Organization Maritime Convention of 2006 must carry a medicine chest to treat ill mariners at sea, while other vessels voluntarily comply or are obligated under other regulations. The World Health Organization International Medical Guide for Ships 3rd Edition provides medicine chest recommendations; however, there is limited evidence demonstrating the need for specific medicines. This study aims to characterize infection distribution and anti-infective needs on board commercial ships.

Methods: This retrospective case review included adult crew members consulting a telemedicine maritime advisory service for suspected or confirmed infection, or for prophylactic antibiotics. Cases were identified via search of the electronic health record (EHR) between January 2021 and December 2021. We calculated rates of suspected or confirmed infection and distribution of infection type. We then reviewed relevant practice guidelines for first-line empiric anti-infective recommendations.

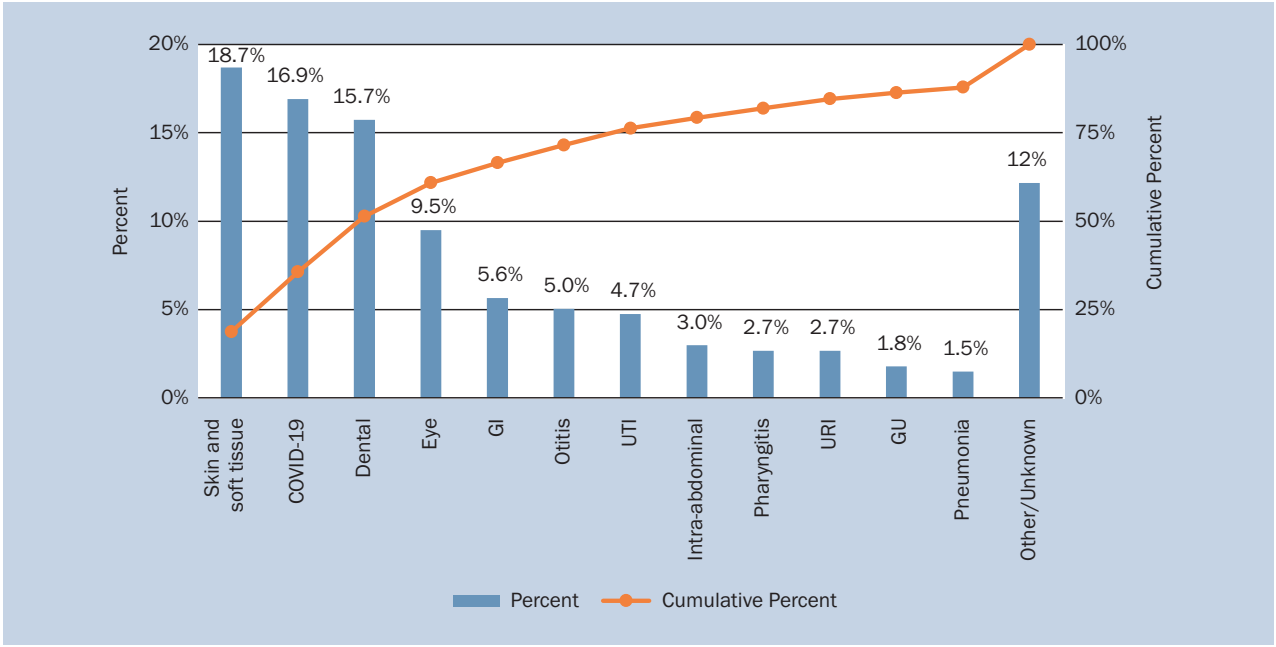
Results: Of all cases reviewed, 43% involved suspected or confirmed infection or required prophylactic antibiotics. Among these cases, the distribution of infections was as follows: 18.7% skin and soft tissue (SSTI), 16.9% COVID-19, 15.7% dental, 9.5% ocular, 5.6% gastrointestinal, 5.0% otic, 4.7% urinary, 3.0% intra-abdominal infection (IAI), 2.7% pharyngeal, 2.7% URI, 1.8% genital, and 1.5% pneumonia (Fig. 1). The remaining 12% of infections had no diagnosis or involved other sites. Per the Infectious Diseases Society of America (IDSA) 2014 guidelines for SSTI, options are: penicillin, cephalosporin, dicloxacillin, or clindamycin (non-purulent); TMP/SMX and doxycycline (purulent); and combinations of beta-lactam, metronidazole, clindamycin, doxycycline, and ciprofloxacin (necrotizing infection, depending on exposure and causative organism e.g. Aeromonas, Vibrio, etc.). The IDSA COVID-19 guidelines suggest the use of nirmatrelvir/ritonavir, remdesivir, or molnupiravir for non-hospitalized COVID-19 patients. The 2017 IDSA guidelines for infectious diarrhea suggest fluoroquinolone or azithromycin (when indicated). The IDSA/American Thoracic Society (ATS) guidelines for community-acquired pneumonia (CAP), depending on risk factors, suggest amoxicillin, doxycycline, a macrolide, amoxicillin/clavulanic acid with macrolide, or levofloxacin. The Surgical Infection Society Guidelines on the Management of Intrabdominal Infection: 2024 Update recommends IV beta-lactam agents for IAI in low-risk patients, with or without metronidazole, depending on the agent; ciprofloxacin plus metronidazole or moxifloxacin alone for low risk patients with beta-lactam allergy; addition of aminoglycoside or fluoroquinolone to beta-lactam in higher-risk patients, and oral step-down therapy.

Discussion: The need to stock specific medications on board a ship is dependent on multiple factors, including likelihood of use, cost of acquisition and non-use of expired product, ability to administer (e.g., oral, intramuscular, intravenous), distance to port, consequences of failure to treat, and patient factors (e.g., medication allergies). A review of current guidelines suggests a combination of specific anti-infectives is necessary to treat the most common onboard infections.

Conclusions: This review provides a framework for developing evidence-based recommendations for anti-infective stock aboard commercial ships to match infection distribution. Next steps include additional case and guideline reviews to address other infection types, as well as cost analysis to develop a versatile, cost-effective, and efficacious list. Further case analysis may provide evidence supporting the inclusion of additional medication classes.

Keywords: infection, infectious disease, antibiotics, medicine chest, TMAS

Figure 1. Infection Distribution Aboard Commercial Vessels



Data on medical incidents at sea — How can it inform prevention and response?

Imogen Stilz

Shell Health, Shell International

ABSTRACT

Introduction: Medical emergencies at sea often occur far from shore based medical facilities but the capacity to provide medical care on board is limited. A seafarer's risk of adverse health consequences increases if their medical needs exceed the ship's capacity, necessitating shore-side reviews, ship diversions, and medical disembarkations to access shore side medical care. This in turn has an operational and commercial impact.

International and national maritime conventions, laws, and guidance on medical fitness, hazard control, and medical care set the standards for mitigating the risk of adverse health consequences on board. However, monitoring their effectiveness and prioritising continuous improvement in real-world practice can be challenging.

Methods: Medical case incident data from a marine transport fleet over 6 consecutive years were analysed for incidence rates, longitudinal trends, and case severity and impact patterns, by high-level diagnostic category. Impact was rated as high in diagnostic categories involving diversion cases and frequent shore-side reviews. Possible mitigations were mapped for representative high-impact diagnoses considering typical illness risk and progression factors.

Information on fleet operations and the global situation, as well as seafarer survey data, were used to contextualise the findings.

Results: A total of 1,375 cases resulted in 396 shore side reviews and 15 diversions, with a mean of 7.8 cases per ship per year. The maritime severity index classified cases as low, medium, and high in 807, 543, and 14 cases, respectively. The longitudinal analysis demonstrated a temporary reduction of the proportion of shore side reviews for all diagnoses during the COVID-19 pandemic. This coincided with an absolute reduction in dental case incidence, which has not returned to pre-pandemic levels. Contemporary seafarer survey data indicates a change in oral health behaviours.

Rarer but severe high-impact categories were urological, accidents, and CVS diagnostic groups. A frequent but low-severity, high-impact category was the dental diagnostic group. Mapping of suitable mitigations for the selected diagnoses demonstrated potential opportunities for multi-level preventative and reactive measures, although there was a high heterogeneity in the combination of measures across the examined diagnoses.

Discussion: This presentation exemplifies how systematic data analysis of medical incidents at sea can identify patterns and trends, monitor the effectiveness of the medical emergency management programme, and inform priority setting for continuous improvement. However, the availability of contextual organisational and environmental information, and the ability to assess seafarer health perceptions and behaviours, were necessary for interpreting the incident data, and for setting multi-level mitigation priorities — emphasising the benefit of integrating multiple information sources.

Keywords: medical emergency response, remote health care, health protection, ill health prevention, continuous improvement, risk mitigation

Cardiovascular risk among different sectors of the seafaring population: A cross-sectional observational study

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ABSTRACT

Introduction: Cardiovascular disease is a common cause of mortality and morbidity in seafarers. Seafarers may find it difficult to engage with preventive healthcare strategies and their seafaring medical examination is a rare interaction with healthcare. This study aims to identify whether cardiovascular risk differs between groups of seafarers and which individuals may benefit from health promotion.

Methods: Occupational and cardiovascular risk factor data from records of all seafarers attending an ENG1 seafaring medical examination at UK clinic Aquamarine Medicals in 2022 were analysed (n = 1321). Those with existing ischaemic heart disease (n = 24) and those under 25 years (n = 200) were excluded, the latter due to low perceived risk. QRISK®3 cardiovascular risk calculator was applied to the study population (n = 1097) to calculate 10-year and Relative Risk (RR) of a cardiovascular event, and QRISK®3 Healthy Heart Age in seafarer groups by vessel type, job role and time away at sea. Descriptive statistics and statistical tests were conducted with a significance level of $p < 0.05$ using SPSS version 26.

Results: Mean QRISK®3 scores were significantly higher ($p < 0.05$) for inshore tourist vessels (M = 11.23, SD = 10.46) and fishing vessels (M = 7.01, SD = 7.27), with fishing vessels showing the highest RR (M = 2.11 SD = 1.41). Research and superyachts vessels had the lowest mean QRISK®3 ($p < 0.05$) and lowest RR (M = 1.19, SD = 0.53) ($p < 0.05$). Job roles with the highest mean QRISK®3 score were pilots (M = 9.72, SD = 6.62), fishermen (M = 7.03, SD = 7.2), and manager/client representatives (M = 5.9, SD = 4.85), which were significantly different ($p < 0.05$) from the lowest mean QRISK®3 in entertainment (M = 1.42, SD = 3.74) and steward/ess (M = 1.59, SD = 4.38) roles. Mean QRISK®3 scores were lowest ($p < 0.05$) for those away at sea for 1–3 months at a time (M = 3.03, SD = 3.94), and highest for those away < 1 day (M = 8.24, SD = 8.60) or 3–7 days (M = 6.84, SD = 7.24) ($p < 0.05$). Fishermen had the highest proportion of smokers ($p < 0.05$).

Conclusions: Guidelines state that those with a 10-year risk of cardiovascular disease (CVD) of ≥ 10% should be assessed for risk modification. Seafaring medical examinations provide an opportunity to identify these individuals and assess the combined impact of multiple medical conditions rather than evaluating them in isolation. QRISK®3 provides a quantitative measure of cardiovascular risk for both clinician and seafarer. These results may underestimate cardiovascular risk as ENG1 medical examinations rely on accurate self-declaration, and co-morbidities such as chronic kidney disease may be unrecognised.

Those working on fishing vessels and as fishermen featured strongly in the highest cardiovascular risk groups and notably had the highest proportion of smokers. This warrants consideration in future health promotion efforts. Conversely, research and superyacht crews emerged as cohorts with relatively lower cardiovascular risk profiles, warranting an investigation into contributory lifestyle and occupational factors.

Seafarers away 1–3 months and 3–6 months exhibited lower cardiovascular risk. Surprisingly, those with shorter durations, less than 1 day and 3–7 days, had highest cardiovascular risk. This may be due to the fact that as seafarers advance in their careers, they tend to work away for shorter periods, either by choice or necessity.

Keywords: cardiovascular risk, prevention, smoking, health promotion

A quality Pre-employment Medical Examination (PEME) as a critical tool for minimizing risks at sea and controlling costs

Crystol Lasley

Aquamarine Medicals

ABSTRACT

Introduction: The elements of a quality PEME include the following:

1. Careful selection, examination and management of approved medical providers.
2. Expansion of assessment criteria.
3. Processing and interpretation of results.
4. Appropriate treatment and life-style changes prior to embarkation.

For the purposes of this presentation, results of both Mental Health and Dental Care analyses will be reviewed. Mental Health has made its' first appearance on the top 20 Diagnoses List for repatriation cases since the COVID pandemic, and Dental Care appointments are currently 27–30% of all Ports of Call appointments.

Methods: Approved medical providers were statistically analyzed based on Not Fit for Duty determinations, rates of repatriations, frequency of Ports of Call appointments and Morbidity/Mortality rates within the first contract period. Expanded assessment criteria may be based on a number of factors. Illnesses inherent to a particular population may require additional testing, as well as consideration of regional/worldwide contagious outbreaks. Post-COVID-19, Mental Health assessments have become a vital component prior to boarding, and based on current expenditure trends, dental care has as well. Laboratory processing was investigated for continuity of sampling/results historically, as well as analysis methods. Fitness determinations upon review of examination results were conducted by a neutral third party, typically a clinic doctor not involved in the actual evaluation process.

Results: Historically, the maritime industry had a policy of not allowing return to duty following mental health treatment. Most prescription medications were prohibited by the flag state, and the vessels contained limited to no medications on board to treat a mental health crisis. The rapid increase in Mental Health treatment requests post-pandemic indicated a need to include both written and verbal evaluations within the pre-employment process. These assessments can be included at minimal cost but provide great benefits. Mental health crises cause severe disruption to onboard operations, requiring 24-hour care and supervision, with limited pharmaceutical options and a significant impact to staffing. Additional evaluation can reduce disruption to onboard operation by ensuring a healthier crew, fewer vessel deviations, and fewer port hospitalizations, medical escort fees, and repatriation expenses. Prior to the COVID-19 pandemic, Mental Health services were not frequently requested. Post-pandemic, Mental Health services rank seventh in frequency and are the most commonly requested non-orthopedic service.

Dental care accounts for on average of 27–30% of all Ports of Call medical appointments. Traditionally, dental coverage has been limited, typically including only examination, x-rays, extraction and emergency pain relief.

Most pre-employment medical forms contain little information regarding dental care. When requested, dental assessments are typically limited to a visual inspection by the PEME physician to ensure no obvious decay is present. The date of last dental examination is rarely recorded. Urgent or emergent dental concerns can lead to loss of productivity, difficulty eating, sleeping and concentrating, and may require port deviation, multiple dental appointments, and increased health risks. Long-term poor

dental health poses numerous risks, including high-risk bacteria in the mouth leading to cardiovascular and respiratory diseases, as well as systemic inflammation.
For fiscal year 2023, the average dental expense per appointment was 228 EUR. However, the cost of an expanded, thorough dental examination in India, Indonesia, and the Philippines ranged from 3–7 EUR. The cost of one dental appointment could cover expanded examination for 32–76 crew members, dependent on location.
Discussion: The cost of investigation prior to sign-on represents a far more effective use of resources than addressing previously unidentified medical conditions after boarding the vessel. Mental health crises and dental issues are two areas that have seen significant increases in recent years, particularly post-pandemic. Tackling these issues during the pre-employment process can lead to healthier crews, fewer operational disruptions, and reduced costs associated with vessel deviations, port hospitalizations, and repatriations.
Conclusions: A quality PEME, with expanded assessment criteria for mental health and dental care, is essential for minimizing risks at sea and controlling costs. Proactively addressing these issues allows the maritime industry to ensure healthier crews, reduce operational disruptions, and optimize resources utilization. Early identification and treatment of medical conditions prior to embarkation represent a strategic and cost-effective approach to maritime health management.

Navigating stress: Health conditions, lifestyle factors, and self-rated health among seafarers

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ABSTRACT

Introduction: This cross-sectional study investigates the associations between health conditions, on the one hand, and lifestyle factors, on the other, and poor self-rated health among active seafarers, and how these associations are modified by stress.

Seafaring is a demanding profession that exposes individuals to various physical and psychological stressors. Self-rated health (SRH) has been shown to be a valid predictor of both mortality and morbidity. While the relationship between chronic diseases, lifestyle, and SRH has been extensively studied in different populations, it has rarely been examined among seafarers. SRH reflects the biological and psychological state of an individual, explaining its association with mortality. SRH serves as a valuable indicator of health status at the intersection of biology and psychology. This study investigates how poor self-rated health among seafarers is influenced by health conditions, lifestyle factors, and stress.

Methods: This cross-sectional study involved 22,432 international seafarers who were actively sailing while participating in the 2024 Re:fresh Health and Wellbeing Survey. The survey included questions covering various demographic, socioeconomic, health conditions, and lifestyle-related factors such as smoking, sleep, drinking, physical activity, and stress. Self-rated health (SRH) was categorized into two groups: "good" (good and excellent) and "poor" (poor and fair).

We first applied binary logistic regression, followed by logistic regression of SRH and health conditions. We also conducted bivariate logistic regression analysis of lifestyle factors and the odds of poor self-rated health followed by a multivariate regression analysis. Finally, we conducted logistic regression of poor SRH and health conditions across four categories.

Results: The top five health conditions reported were back pain, knee pain, other joint pain, hypertension, and diabetes/high blood glucose. While the findings indicated a high prevalence of good or excellent SRH among seafarers (94%), they also revealed that several health conditions were linked to higher odds of reporting poor health. Stress was found to mediate and have a synergistic effect on back pain (OR 2.1, CI 95% 1.76–2.57), knee pain (OR 2.0, CI 95% 1.56–2.56), hypertension (OR 2.2, CI 95% 1.75–2.82), and constipation (OR 4.0, CI 95% 2.50–6.43). Additionally, low physical activity (OR 1.7, CI 95% 1.26–2.34), poor sleep (OR 2.1, CI 95% 1.78–2.51), regular smoking (OR 1.3, CI 95% 1.10–1.64), loneliness (OR 3.3, CI 95% 2.27–4.66), and high screen time (OR 1.7, CI 95% 1.35–2.09) were all associated with poor SRH.

Discussion: This study highlights the complex interplay between health conditions, lifestyle factors, stress and SRH among active seafarers. Despite the high prevalence of good or excellent SRH (94%), several health conditions were significantly associated with higher odds of reporting poor health. This underscores the importance of addressing specific health issues within this occupational group. Lifestyle factors were also associated with poor SRH. Promoting healthier lifestyles while at sea could improve SRH. Addressing loneliness through social support is crucial, given its strong association with poor SRH.

Keywords: self-rated health, lifestyle factors, stress and seafarer health

Health issues in the fishermen in Bangladesh

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ABSTRACT

Introduction: More than 80 percent of the animal protein in the Bangladeshi diet comes from fish. Fishing is one of the most important economic sectors in Bangladesh. Fishermen here not only work in one of the most dangerous professions, but also belong to the most vulnerable and poorest communities, with very limited access to medical care.

The aim of the study was to understand the health status and risk factors present among Bangladesh fishermen.

The field research was conducted at the Mohipur and Alipur fish landing centers in Patuakhali District, Bangladesh as a parallel activity to the *"The fishSAFE 2025* Fishing Safety Intervention Program — Phase 1: Bangladesh" from January 10–16, 2020.

Artisanal fishing is the main type of fishing and net fishing is the most dominant method for the local fishing communities. Fishing vessels used are 40–55 feet (12–17 meters) long and 12 to 16 feet (3.5–4.5 meters) wide. Safety measures are often neglected, and the living conditions on board are very poor.

Materials and methods: Atotal of 93 Seafarers and their spouses were interviewed. A cursory medical examination was conducted as permitted by the available conditions.

Results: The main health issues among fishermen and their spouses include allergic and pulmonary diseases, abdominal problems most probably connected with polluted drinking water, eye diseases and musculoskeletal complaints.

Conclusions: Difficult working conditions and poor living standards often lead to various health issues among Bangladesh fishermen and their families. More research is needed to establish effective health assistance and health promotion programs for this population.

Keywords: Bangladesh, fishing, health, examination, medical care

Preliminary results of the National Medical Hotline for recreational and commercial divers

Konstantin Logunov

Clinic of advanced medical technologies, St. Petersburg University

ABSTRACT

Introduction: The aim of this study was to assess the patterns of illness and injury among Russian-speaking divers.

Methods: An analysis was conducted on requests for medical advice from recreational and commercial divers in distress.

Results: Over 200 requests for advice were analyzed over a 3-year period. Most requests (95%) came from abroad, especially from recreational divers. At least half of all those who sought help participated in multi-day diving trips lasting more than 5 days, including a series of daily dives, often two dives per day. About a third of the requests concerned non-specific (not directly related to diving) diseases affecting the diver or their accompanying person. Of these non-specific illnesses, 60% were caused by colds, 25% by household injuries (cuts, bruises, car accidents, etc.), and 15% by chronic or newly diagnosed illnesses (skin tumors, ischemic heart disease, gastroduodenitis, etc.). Many calls (70%) concerned incidents directly related to diving. Of these calls, 15% were related to injuries sustained during preparation for diving or descent, such as falls on the deck or from the ladder, skin abrasions on equipment elements, etc. All other calls, which accounted for 60% of all hotline inquiries, concern cases related to changes in ambient pressure during diving. Hotline consultants have not yet encountered a single case of arterial gas embolism. Barotrauma of the ear and paranasal sinuses did not exceed 5%. Half of the decompression disorders were represented by mild forms, including skin changes and joint pain, and half by manifestations of inner ear decompression disorders (vertigo, etc.).

Discussion: Health problems in divers generally correspond to the prevalence of modern underwater technology. The widespread use of multiple daily and serial multi-day descents has led to a high frequency of inner ear decompression disorders. The low frequency of ear and sinus barotrauma, a very common diving injury, is probably due to the mild nature of the condition and its widespread awareness. In such cases, qualified help is readily available — not only from general practitioners, but even from experienced diving instructors — making the hotline unnecessary. The fact that in the first three years of operation, the hotline's free consultants have not encountered cases of arterial gas embolism confirms the rarity of these incidents.

Conclusions: The National Medical Hotline for recreational and commercial divers has proven useful. In general, the nature and patterns of calls are not much different from those to the international DAN hotline. The practice of multiple daily diving and the widespread use of breathing gas mixtures increase the relevance of inner ear decompression disorders. Further research into the physiology of repetitive diving is needed.

Keywords: diving medicine; diving telemedicine; diving incidents; diving emergencies

Long-term trends in illness and injury on board ships (25 years of TMAS commercial experience)

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ABSTRACT

Introduction: The objective of this study was to assess long-term trends in morbidity and injury among seafarers.

Methods: An analysis was conducted on requests for medical consultations from ship crews subscribed to a commercial radio-medical service. The analysis included requests from sea-going merchant vessels only (dry cargo ships, bulk carriers, tankers of all types, container ships, etc.); fishing vessels and cruise ships were not considered.

Results: More than 5,000 consultation requests were completed over 25 years were analyzed. The overall annual rate of requests per vessel, although increasing, was modest, at 2–3 cases per ocean-going vessel. However, the pattern of expected diagnoses gradually changed over time. The proportion of cardiovascular diseases decreased almost threefold — from slightly less than 15% to slightly more than 5%. At the same time, presumptive diagnoses of acute coronary episodes and cerebral strokes have nearly disappeared. Only poorly controlled arterial hypertension remains, its proportion in the total number of advised cases has remained stable for many years at approximately 5%. The number of dental problems has increased annually, now accounting for up to 15% of cases. The proportion of the musculoskeletal problems has grown steadily over 25 years and is approaching 12%, with "back pain" accounting for slightly more than half of these cases. The prevalence of urinary system diseases, although still variable, has gradually declined, from 12–15% to 5–8%. Among these diseases, a decline in the proportion of renal colic is noticeable: 25 years ago, they accounted for 2/3 of cases, but now they represent slightly less than half, as the rate of urogenital infections has increased. The trends in injuries (consequences of external causes) are surprising. All vessels recorded a sharp twofold increase in absolute injury rates during the COVID-19 period. A similar, and stil growing, surge has been observed in the last 18 months on ships operated by Russian companies.

Discussion: Over the past two decades, specialized programs to combat cardiovascular diseases have been actively promoted globally and in maritime shipping, and algorithms for preliminary medical examinations of seafarers have been optimized. This explains the significant decrease in cases of coronary disease. The continuing relevance of high blood pressure complications suggests possible gaps in prevention and control. The trends in other diseases align with gradual changes in crew demographics, including gender and age distribution. Injuries are almost always caused by the human factors, and their patterns reflect changes in the psychological climate on board ships — during the period of widespread COVID-19 restrictions and more recently, due to sanctions-related pressure on Russian shipping.

Conclusions: It may be time to shift the focus of illness prevention on board ships from coronary disorders and strokes to other conditions. Measures to improve the psychological climate and reduce stress should be prioritized to help prevent injuries on board ships.

Keywords: maritime health, TMAS, onboard morbidity trends, illness prevention on board ships, preventing injuries on board ships

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Healthy sailing: Prevention of infectious diseases on cruise ships

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ABSTRACT

Introduction: In semi-enclosed environments like large passenger ships, frequent close contact may facilitate infection spread without robust prevention and control measures. Both known and unknown public health threats can significantly affect the health of travellers and port communities, while disrupting passenger shipping operations. The HEALTHY SAILING project (Nr. 101069764) unites a consortium of 24 partners from 12 countries to prevent, mitigate and manage (PMM) infectious diseases on large passenger ships.

Methods: The project employs a multi-method approach tailored for cruise ships, passenger ferries and expedition-style ships (Fig. 1). Epidemiological, qualitative and experimental studies, systematic literature reviews and risk assessments have established a scientific evidence base. Mathematical and computational fluid dynamic (CFD) modelling assesses the potential impact of infection PMM measures. This foundation informs development of PMM measures integrating artificial intelligence (AI) and machine learning, with their use validated in passenger ship contexts through pilot-testing, technological demonstrations and intervention studies. Outputs are integrated through evidence-informed guidelines, training toolkits and interoperability of ship/port operations.

Results: After two years of implementation, four epidemiological studies, two scoping reviews and five systematic reviews have described mechanisms facilitating infection spread and PMM measure effectiveness, considering differences in passenger ship type (Table 1). Mathematical modelling produced evidence about norovirus outbreak drivers on cruise ships, and potential impact of isolation measures. Experimental data collected on a cruise voyage validated CFD models to predict respiratory droplet/aerosol dispersion in ventilated ship environments and assess infection risk. Infection chain analyses for norovirus, influenza and COVID-19 identified critical points along the infection chain. Prototypes and toolkits supporting early threat detection and healthy onboard environments are under development: an E-surveillance system integrating demographic/voyage/medical data to produce epidemiological information; an AI-Intelligent Immune System to support health measure decision-making; a software facilitating Water Safety Plan development on cruise ships; and a toolkit enhancing effectiveness of cleaning and disinfection practices on board. Pilot-tests and intervention studies are underway to assess effectiveness and feasibility of these activities. Surveys and focus groups improved understanding of facilitators/barriers to traveller compliance with PMM measures. A cruise ship intervention

study produced a hand hygiene behaviour change toolkit, while a blended learning toolkit is under development to provide training for crew and passengers. An International Scientific Panel for infectious disease on passenger ships was established, as a global forum to exchange good practices regarding PMM measures.

Discussion: Results from initial project activities identified the importance of strict traveller compliance with PMM measures, including individual isolation and immediate symptom reporting. A multi-layered approach to PMM measures should be considered, applying a set of measures in combination. Early detection strategies can be supported with real-time surveillance. By validating outputs in real-world maritime settings, the project highlights the potential effectiveness of developed measures.

Conclusions: HEALTHY SAILING demonstrates the significance of comprehensive infection PMM measures for safeguarding public health in maritime transport. The project addresses the need for interoperability of these measures with passenger ship and maritime environments, evidence-informed guidelines, and international harmonization of public health response measures. By uniting these components, HEALTHY SAILING efforts will support safer, more resilient, competitive and efficient passenger shipping.

HEALTHY SAILING project has received funding from the European Union's Horizon Europe Framework Programme (HORIZON) under Grant Agreement number 101069764. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them. This work was funded by UK Research and Innovation (UKRI) under the UK government's Horizon Europe funding guarantee [grant number 10040786], [grant number 10040720]. This work has received funding from the Swiss State Secretariat for Education, Research and Innovation (SERI).

Keywords: infectious diseases, maritime health, port health care, ship sanitation, COVID-19

Figure 1. HEALTHY SAILING methodological approach

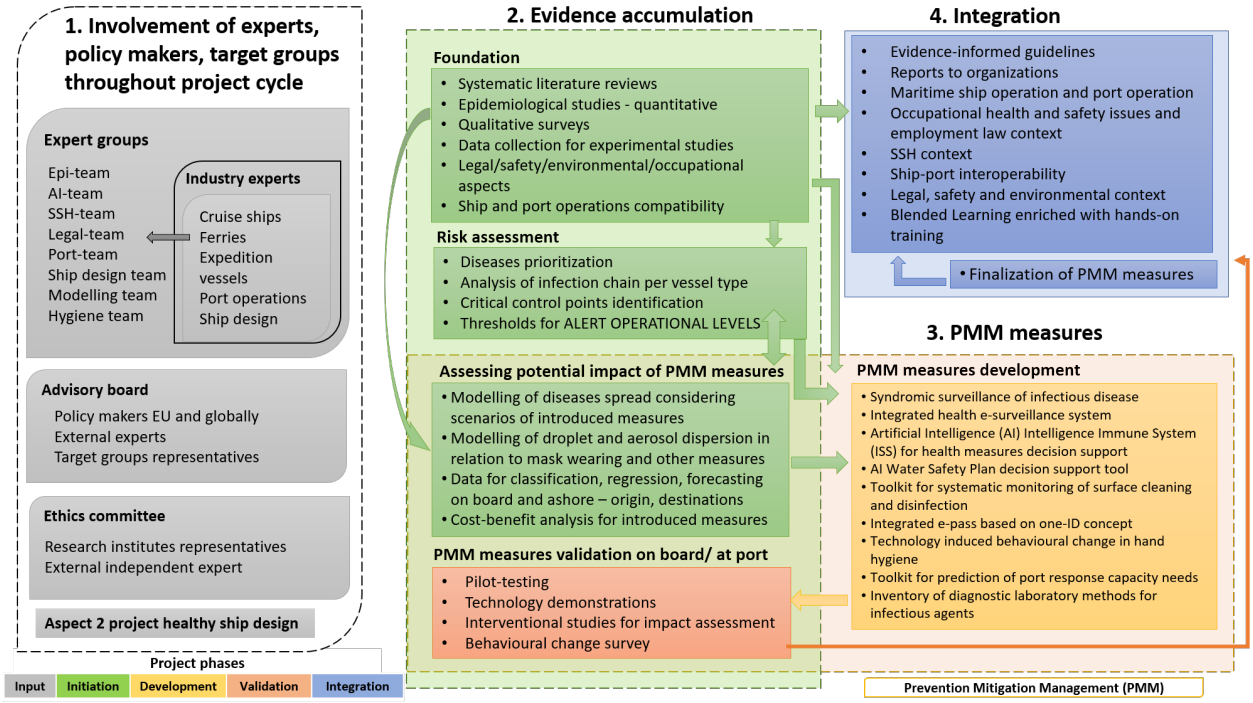

Table 1. Overview of activities establishing scientific evidence base

2 Scoping Reviews	• Online inventory of 600+ publications on infectious disease prevention and control in passenger ships and ports
5 Systematic Reviews	• Infection frequency, transmission modes, outbreak dynamics, risk factors and measure effectiveness (all communicable diseases)
	• Infectious disease impact on seaports
	• Behavioral determinants of infection spread in cruise crew & passengers
4 Epidemiological Studies	• Retrospective cohort study: cruise line medical logs for communicable diseases
	• Ecological and interventional study: effectiveness of non-pharmaceutical measures to prevent COVID-19 on cruises
	• Retrospective observational study: COVID-19 cases (cruise ships and ferries)
	• Retrospective cohort study: gastroenteritis outbreak on a cruise ship
2 KAP Surveys	• Cruise passenger & crew: infectious disease knowledge, attitudes on measure compliance, practices for symptom reporting
7 Focus groups	• Faciliators and barriers travellers face complying with health measures

Fatigue and sleepiness on board ferries operating in the English Channel

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ABSTRACT

Introduction: Sleep quality on board vessels can be impaired by many factors including noise, vibration, ship movements as well as high work strain which may favour development of fatigue [1]. Fatigue can endanger the safety of a vessel and is one of the most common causes for maritime disasters [2]. This also applies to ferries in high traffic areas. The aim of this study is to analyse fatigue and sleepiness on board three ferries operating in the English Channel.

Methods: All participants took part in surveys using four standardised questionnaires (Epworth Sleepiness Scale (ESS), Stanford Sleepiness Scale (SSS), Daily Fatigue Impact Scale (D-FIS) and the WHO-Five Well-Being Index (WHO-5)). The following additional measurements were conducted in a subgroup (Investigation Group (IG)): Sleep efficiency and sleep times were estimated by actigraphy. Furthermore, sleepiness was examined using pupillometry (PUI) before and after shift. All seafarers remained on board for two weeks generally with daily 12-hour shifts. For some seafarers (cross-shift group), the shift system was changed after one week (early shift to late shift and vice versa).

Results: A total of 193 seafarers took part in the study, 110 thereof as part of the IG. The replies of many seafarers pointed to sleepiness, fatigue and reduced well-being (elevated values for ESS (36.8%), SSS (46.1%), D-FIS (59.1%) and decreased values for WHO-5 (28.5%); Fig. 1). According to SSS the average sleepiness increased continuously for all participants over the two-week period of service on board. The average sleep length of the main sleep period was 6.8 h (± 1.5 h SD) with an average sleep efficiency of 91.6% (± 4.4% SD) for all participants in the IG. PUI results showed that 3.9% of participants were classified as “unfit for duty” during the first week and 5.8% during the second. Participants of the cross-shift group exhibited a stronger increase in striking PUI values between pre- and post-shift measurements after the shift change.

Discussion/conclusion: The results indicate that fatigue and daytime sleepiness are widespread among Channel ferry crew members. Regarding ESS, SSS, and D-FIS, the significant differences suggest an increasing subjective sleepiness, both within a working day and within a regular two-week working period on board. This may negatively impact seafarers’ occupational safety, health, and well-being, as well as adversely affect ship and passenger safety. Furthermore, rotating shift systems can amplify such negative effects and should be avoided.

Keywords: maritime medicine, sleepiness, ship, PUI

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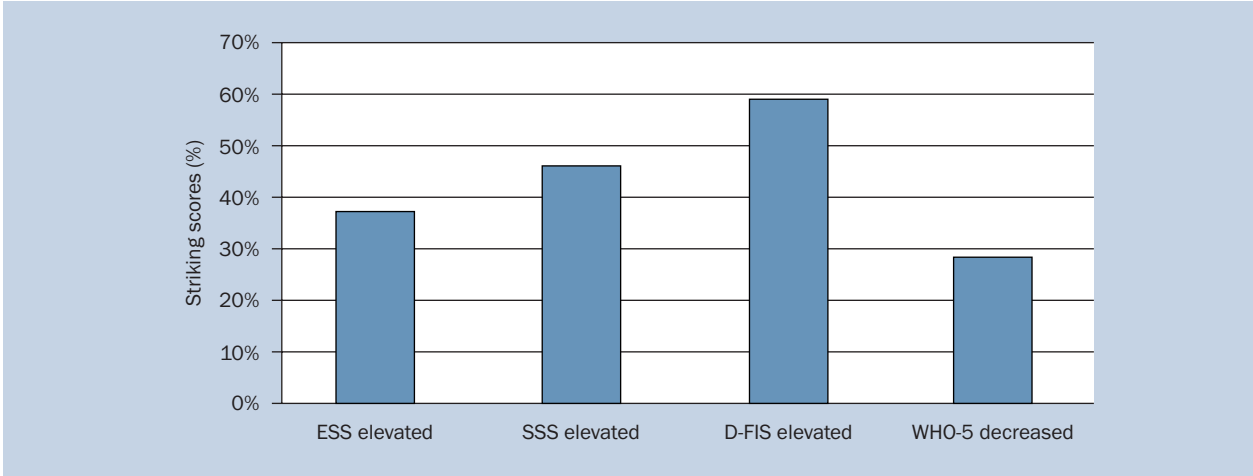

Figure 1. Percentage of striking scores of seafarers for different questionnaires

Mental gymnastics — for seafarers health and wellbeing

Jelena Filipovic, Milenka Vranes Grujicic

PHI Medical Vranes, Bar, MNE, Occupational and Maritime Medicine

ABSTRACT

Introduction: Specific working conditions can have a negative impact on the physical and mental health of seafarers. There are numerous individual and work environment factors that affect the mental health of seafarers. Psychological problems, such as depression, anxiety and alcohol addiction and/or psychoactive substances (PAS), have a negative impact on seafarers' ability to work, increase the risk of incidents, and in extreme cases can lead to suicide.

Materials and methods: In 2022, we conducted a survey using the Hospital Anxiety and Depression Scale (HAD scale) on 74 Montenegrin seafarers sailing on international ships. The study design was retrospective and descriptive. Known and recognized statistical software packages (IBM SPSS Statistics 30.0.0.) were used for statistical processing.

Results: A total of 74 seafarers participated in the survey. The most represented age group is from 26 to 35 years old (39.2%). The total average age of all seafarers was 41.16 years, and the highest number of officers was 28 (37.8%). According to the HAD scale, 46 (62.16%) seafarers did not show anxiety and/or depression, while 14 (18.92%) showed signs of anxiety, and 7 (9.46%) of respondents showed depression. Both conditions, anxiety and depression, were the most prevalent among engine officers, in the age category of 36 to 45 years.

Conclusions: Signs of depression and anxiety often remain unrecognized, or are not given the necessary importance. Psychological support programs are important to help seafarers understand when they need help. Today, there are numerous call centers that provide this type of support and assistance, and guarantee anonymity. Life on board does not necessarily have to be difficult, if everyone takes care of their mental health and promotes a positive working atmosphere. The best way to prevent mental health issues is by adopting and practicing love and tolerance and compassion.

Keywords: mental health, anxiety, depression, mental gymnastics, seafarers

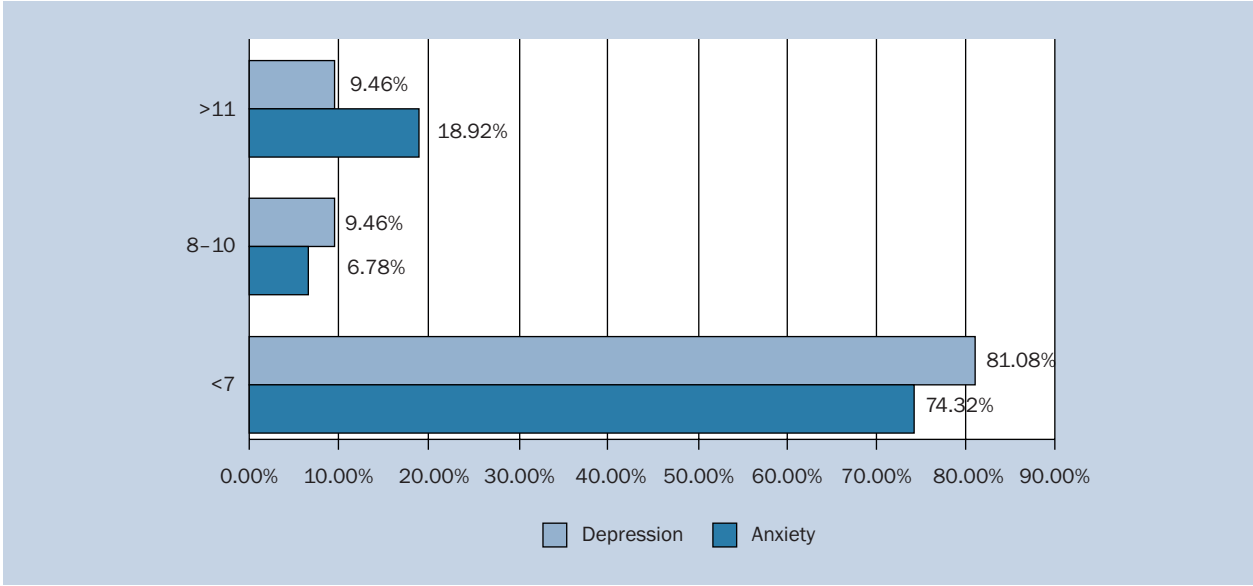

Figure 1. Prevalence of anxiety and depression symptoms

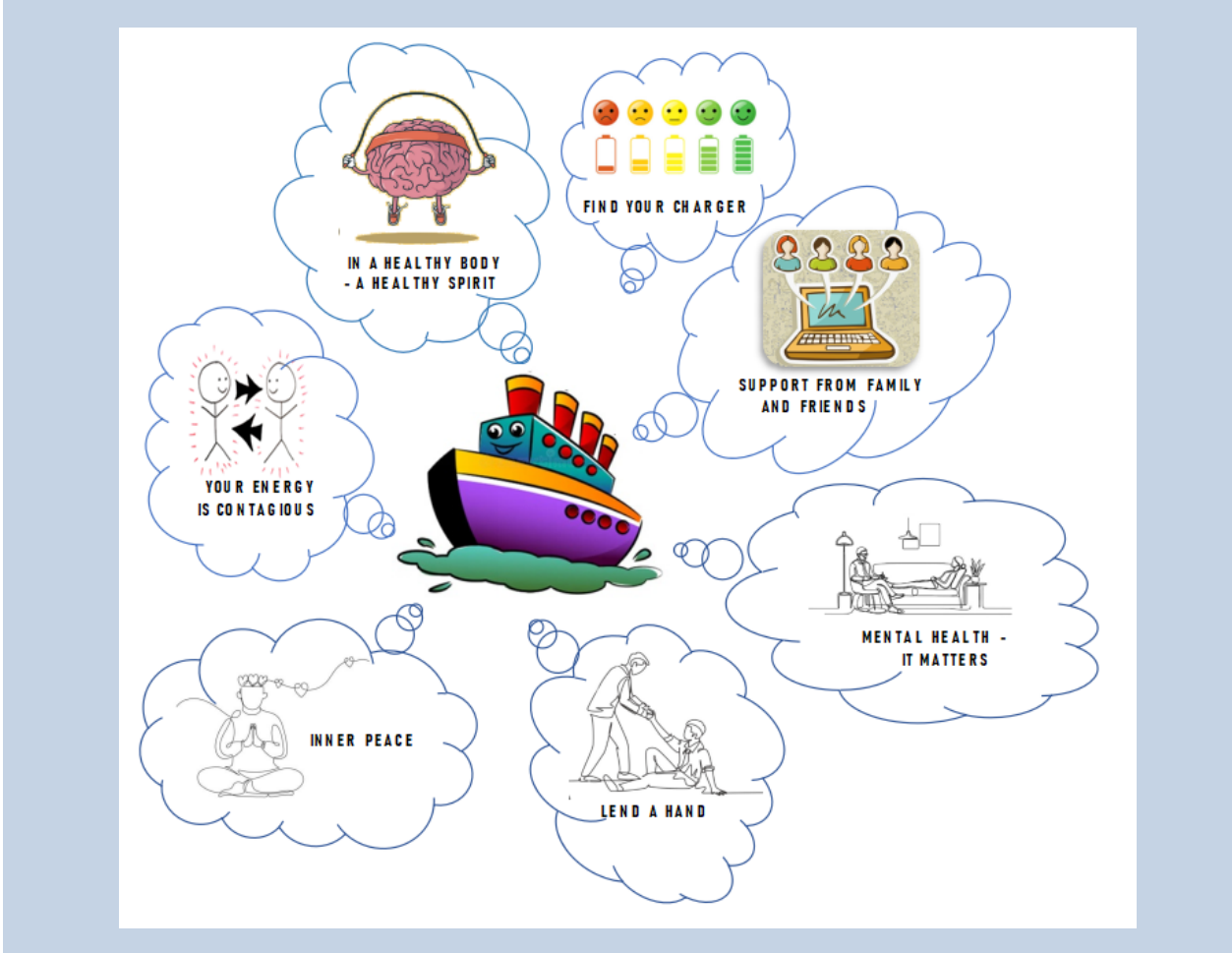

Figure 2. Mental health prevention

Acute abdomen — recognition and management

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ABSTRACT

Introduction: In cases of suspicion of acute abdomen, or appendicitis, the Alvarado score can be helpful, as it predicts the probability of an appendicitis diagnosis. Many studies have shown a high success rate of conservative treatment with antibiotics, following appropriate protocols, which allows time to reach professional medical help.

Case report: A case of acute appendicitis on board a ship, in a young seaman aged 34, is presented. During the night, he experienced sudden colic-type stomach pains, which intensified until the morning hours. Palpatory sensitivity was present in Mc Burney's point, without accompanying complaints. After the telemedicine consultation, within 20 hours of the onset of pain, the antibiotic amoxicillin 1 g every 8 hours was administered due to suspicion of acute appendicitis. The seaman was immediately disembarked the next day, transported to the hospital, where an emergency appendectomy was performed. The postoperative course was uneventful — the sailor was discharged for home treatment after 4 days, and he returned to normal work activities 3 weeks after the operation.

Conclusions: Acute appendicitis is one of the most common causes of acute abdominal pain that requires urgent surgical intervention, due to the high risk of perforation and other life-threatening complications. According to telemedicine reports, as many as 46% of reported medical emergencies require surgical treatment. Adequate education of seafarers regarding the recognition of symptoms and signs, as well as first aid training, is crucial in recognizing acute conditions.

Keywords: acute abdomen, appendicitis, medical assistance onboard, seamen, seafarers

Figure 1. Appendicitis — clinical signs

Figure 2. The Alvarado score

Collaboration between maritime doctors and nautical colleges: the best practice of the pilot project between Liguria Health Port Authority and "ANDREA DORIA" Imperia Nautical College

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ABSTRACT

Introduction: Since the late 1980s, the World Health Organization has emphasised schools' role in promoting health and public health interventions in school settings have proved to be effective to promote behaviours/practices that improve physical, mental, and emotional health. At the same time, future officers on modern ships need training in maritime safety, occupational health, and public health issues. It is also very important that conditions or diseases that render individuals unfit for work on board can be detected at the start of the course of study.

In light of the above, a pilot collaboration project has been established between Liguria Health Port Authority and "Andrea Doria" Nautical College (which is one of the schools within I.I.S. Polo Tecnologico Imperiese), one of the most prestigious and renowned Italian centres for marine education and training for future merchant ship officers (deck and engineer), since it was established in 1856.

In this work, we present the actions included in this program as best practices.

Methods: The collaboration project in its first phase (2025–2027) includes three main areas of school-based interventions:

1) Students' health promotion;
2) Teaching and training on ships' officers occupational and public health responsibilities;
3) Screening of conditions or diseases that cause unfitness for maritime work (see details in Table 1).

The target of the interventions is the entire nautical school student population aged 14–19 (180 students). The first phase of the project will last two years, with periodic follow-up meetings to analyse the results based on a set of indicators and identify corrective actions and continuous improvement for the planned activities.

Discussions: A successful promotion of occupational medicine and public health for seafarers should start in nautical school, where future ship officers are trained. In particular, preventing unhealthy habits, like tobacco use, alcohol abuse and drugs dependence could be very important for their future life on board. In addition, according to international ILO/IMO conventions, WHO ship sanitation rules, EU Shipsan Program, and US CDC Vessel Sanitation Programme, ship officers are increasingly involved in management of maritime public health system and crew occupational health, necessitating specific training in these competences.

Last but not least, early detection of conditions or pathologies listed as causes of unfitness to maritime work (e.g. colour vision defects) in students before they make a definitive career choice could help them focus on a different course of study (e.g. engine versus deck) or another professional goal in the maritime sector (e.g. logistics) without wasting valuable time and effort.

Conclusions: Even though the project is still in its early stages, we definitely think that our activities so far are worth presenting to obtain valuable international feedback. Collaboration between maritime medical doctors and nautical colleges could become a fundamental tool in the future of maritime medicine, ensuring a healthier and safer global maritime workforce.

Keywords: nautical students medical examination, school health promotion, public and occupational health training

Table 1. Content and tools

1. **HEALTH PROMOTION ISSUES:** vaccinations, motor vehicle safety, safer and healthier foods, promotion of physical activity, recognition of tobacco use as a health hazard, prevention of HIV and other sexually transmitted infections, healthy nutrition, physical activity, obesity prevention; mental health awareness. (**Tools:** questionnaires, informative brochures and meetings)
2. **EDUCATION ON SHIP'S OFFICERS OCCUPATIONAL AND PUBLIC HEALTH COMPETENCES:** safety of ships workplaces, control of infectious diseases onboard, WHO International Health Regulation 2005, WHO Ship Sanitation System management (Potable and recreational water, Sewage and ballast water, waste management, pest control, safe food, Engine room requirements, telemedical assistance, first aid skills). EU Shipsan Program, CDC Vessel Sanitation Program (**Tools:** dedicated workshop and training on the field during inspections onboard).
3. **VOLUNTARY SCREENING** for pathologies that are cause for unfitness to maritime work according to ILO/IMO guidelines: (**Tools** BMI and physical capability for obesity, blood glucose control for diabetes, Ishihara test and indication for second level tests, if required, for colour vision deficiencies). Meeting with the student's family in case of specific conditions/pathologies requiring awareness and insight are also planned.

Sailing towards best practices in telemedical maritime assistance services (TMAS): Insights from the Esbjerg Workshop

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ABSTRACT

Introduction: The provision of TMAS for seafarers is required under the Maritime Labour Convention 2006 and calls to such services are increasing. There is little consistency in the competencies required to become a TMAS doctor and the training of doctors varies hugely between providers. Seafarers live and work in a unique environment but there is no internationally agreed best practice as to what training is required to ensure appropriate medical advice is provided, nor how such training should be delivered.

Methods: 16 representatives from TMAS around the world met with the aim of sharing best practice and gaining consensus on a curriculum of learning objectives for all doctors providing medical advice to seafarers. Discussions also covered modes of learning appropriate for the different topics and other possibilities for ongoing maritime education for TMAS doctors.

Results: Three main areas were identified as key areas of knowledge for TMAS doctors - the maritime context, appropriate medical knowledge and skills and local systems and processes. The area unique to maritime TMAS is the maritime context including pre-employment medical requirements, the variety of ships and roles on board, the medical training of seafarers and the medical guide and equipment available to treat an ill or injured seafarer, cultural and communication challenges and the availability and challenges of search and rescue services. Clinical training is necessary to ensure that all doctors possess and maintain the appropriate medical knowledge and skills to respond to all seafarer illness and injuries, whatever their clinical background. Different learning modalities could be used for each area including e-learning, case discussions, scenario training and familiarisation visits to key service providers such as JRCC.

Discussion: Training in the relevant topics, particularly in the maritime context itself and issues particular to living and working on board, is essential to ensure that appropriate advice is given to support seafarers at times of illness or injury on board. Training in this area should be delivered through an e-learning course. By presenting at ISMH we hope to stimulate further discussion of the proposed curriculum and learning methods amongst a wider group of TMAS providers and with this as a basis we will consider the use of Delphi or other similar methodology to ensure validated consensus. Once this is obtained the proposals should be developed into a practical training provision that can be accessed by TMAS doctors internationally. In person clinical training including case discussions and scenarios could occur on a national, regional or international basis and again several key topics and skills should be identified.

Conclusions: Implementation of such training opportunities will require sustained collaboration, funding, and accreditation by reputable institutions. The Esbjerg workshop marked a significant step in identifying and addressing a critical gap in maritime health services. By establishing a shared vision for TMAS doctor training, it sets the stage for a future where seafarers can rely on consistent, expert medical guidance, no matter where they are in the world.

Keywords: TMAS, training, doctors

Psychophysiological assessment of burnout risk among seafarers: Insights from Novikontas Maritime college

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[2]CleverPoint Marine

ABSTRACT

Introduction: Working on board a vessel presents higher physical and psychological stress risks compared to onshore employment. As a result, psychological issues are more prevalent among seafarers than in the general population. Research highlights that stressors such as adverse physical working conditions, social difficulties, and health concerns contribute significantly to mental health challenges among seafarers (Svetina M et al., 2024). These combined factors lead to professional burnout and an increased likelihood of seafarers leaving the maritime industry.

Most studies on seafarers' psychological well-being rely on anonymous surveys (Brooks SK & Greenberg N., 2022), but this method has limitations such as the "macho effect", a tendency to select average responses, and intentional distortion of results.

For over two years, the Novikontas Maritime College has integrated a psychophysiological assessment tool into its educational process to detect burnout risk among seafarers. This study summarizes findings from this period.

Materials and methods: This study analyzed data from psychophysiological testing of 454 male seafarers, aged 18 to 66, who underwent training at the Novikontas Maritime college between 2022 and 2024. Participants were divided into four age groups: up to 30, up to 40, up to 50, and over 50 years old (89, 140, 145, and 80 individuals, respectively).

Data collection was carried out using CleverPoint's technology, which includes a virtual reality headset equipped with EEG and ECG biosensors, along with the Stressonika psychophysiological testing platform. This method was chosen for its ability to accurately assess stress response intensity through heart rate variability indicators. Statistical analysis was performed using Statistica 12 software.

Results: Figure 1 presents the relationship between cognitive performance and stress response intensity among all tested seafarers. A solid rectangular frame highlights seafarers with high stress levels, while a dashed circular frame marks individuals at risk of burnout. The first group included 335 respondents (73.8%), and the second group consisted of 96 individuals (21.1%).

Cognitive function and age: Figure 2 shows the relationship between cognitive functions and age. No significant differences in stress response intensity were observed between age groups. However, cognitive functions decline with age, with statistically significant changes noted in older age groups.

Discussion: A high percentage of individuals showing significant stress responses to cognitive workload suggests risks for chronic stress conditions. The data also indicate that stress response intensity is independent of age, which suggests that older individuals may face not only increased burnout risk but also stress-related health issues. Seafarers over 40 with high stress levels and low cognitive performance require special attention from psychological and medical services, as well as ongoing health monitoring.

Conclusions:

1. A high percentage of maritime professionals exhibit excessive stress responses.
2. The natural decline in cognitive functions with age may have a more significant impact on maritime workers than the general population, requiring further investigation.

3. Integrating psychophysiological testing into training programs can help identify seafarers who need training in self-recovery and stress management skills.

Keywords: psychophysiological assessment, burnout risk, cognitive performance, well-being

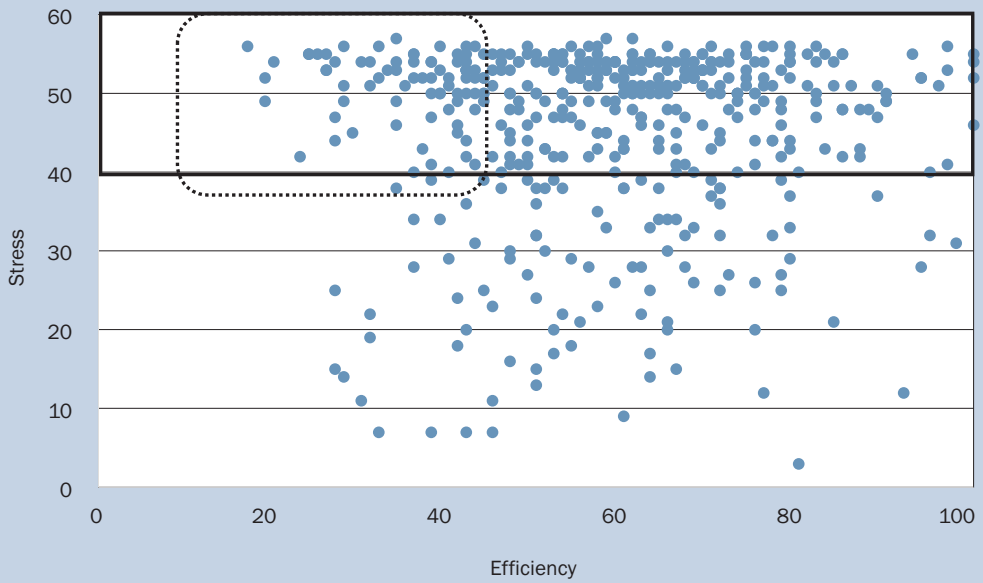

Figure 1. Diagram of the relationship between cognitive performance and stress response intensity

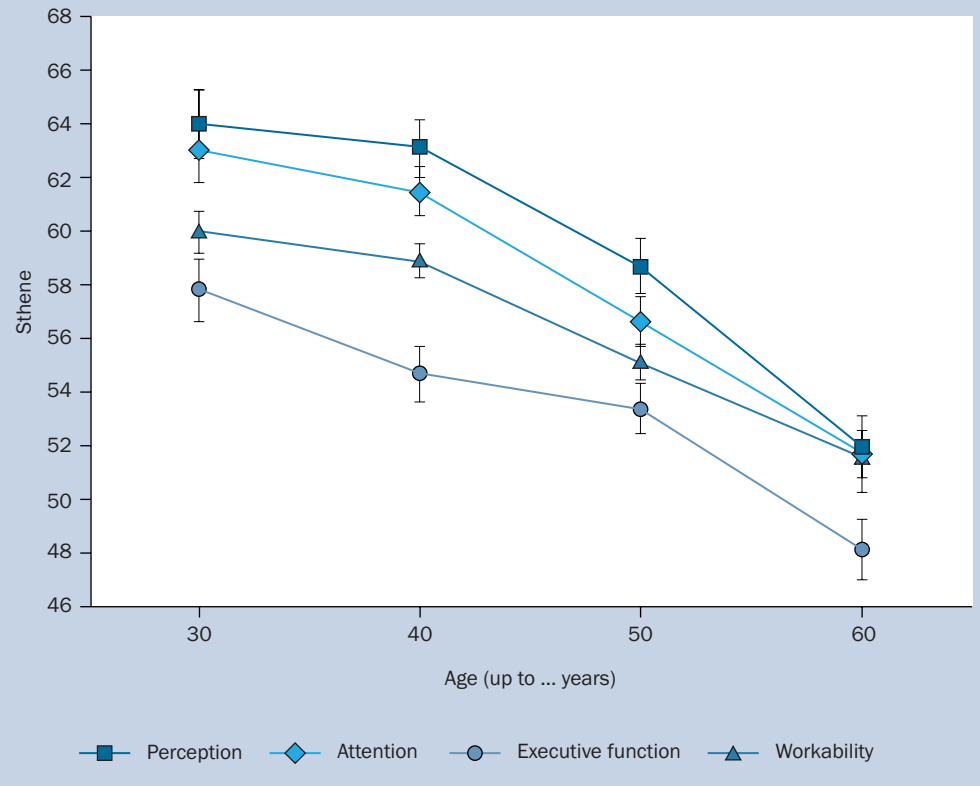

Figure 2. The relationship between cognitive functions and age

Tackling seafarer exhaustion in the cruise industry: A dyadic approach for mitigating fatigue and burnout

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Maersk Training Denmark A/S, Lloyds Maritime Academy, University of Essex

ABSTRACT

Introduction: Seafarers work for extended periods without days off, often leading to fatigue and burnout, which adversely impacts their social, emotional and physiological functioning (Wan et al., 2023). This negatively affects productivity, engagement, and overall well-being leading to "presenteeism" — i.e., physically there but mentally disengaged. Despite its significance, this issue has yet to be systematically addressed in the maritime industry to break the cycle of fatigue-induced mental health decline, which previous research associates to declined cognitive performance, engagement, and safety (Islam et al., 2022; Dohrmann, Herttua & Leppin, 2020), while evidence-based fatigue management programs have shown potential to sustain productivity over long contract periods and enhance both crew welfare and operational efficiency (Andrei et al., 2020). This research challenges the prevailing industry belief that days off are impractical by implementing a dyadic approach (integrating psychological and physiological interventions), yielding significant benefits for both shipowners and seafarers.

Materials and methods: Using a quasi-experimental design, this study examined the effects of a comprehensive fatigue management program implemented for 102 crew members in the guest services department of the cruise sector. Preventive measures (psychological) included a 17-item positive psychology framework which was introduced to enhance happiness by utilizing psychoeducation; providing coping skills to mitigate stress perception and fatigue. Psychoeducation, an evidence-based intervention helps individuals understand how and why coping skills work to help them and has been linked to improved treatment compliance and outcomes for stress, depression and anxiety (Dolan et al., 2021). Cognitive Behavioral Therapy (CBT) techniques were also provided to help reframe stress perception. The physiological component of the intervention allowed seafarers to have one day off (24 hours) every ten days to ensure they got adequate and unbroken rest. Assessments were made at four different points in time using the Maslach Burnout Inventory (MBI) to measure exhaustion, cynicism, and professional efficacy over a three-month period. Ships were randomly assigned by the cruise company.

Results: The program resulted in a significant decrease in the exhaustion and cynicism levels across all three vessels. When the day-off intervention was removed, fatigue metrics increased in two of the three ships but subsequently declined when the intervention was reinstated. Additionally, 94% of participants responded positively to the program in a satisfaction survey. A comparative analysis of non-participating vessels indicated that participants who received the intervention reported lower levels of exhaustion and cynicism, and higher levels of professional efficacy than other vessels.

Conclusions: Prevention and intervention strategies for fatigue management were measured at four different points using the Maslach Burnout Inventory (MBI). The results showed a significant decrease in exhaustion and cynicism across all ships when psychological and physiological approaches are combined, changing the person and the environment synchronously. This dyadic approach can lead to long-term improvements in crew well-being, risk reduction and improved retention. To further validate this approach, future research should explore its applicability across maritime sectors, including larger and more heterogenous cohorts.

Keywords: seafarer exhaustion, burnout, fatigue management, psychological interventions, cognitive behavioral therapy, stress perception maritime health, preventative measures, seafarers, mental health, crew welfare

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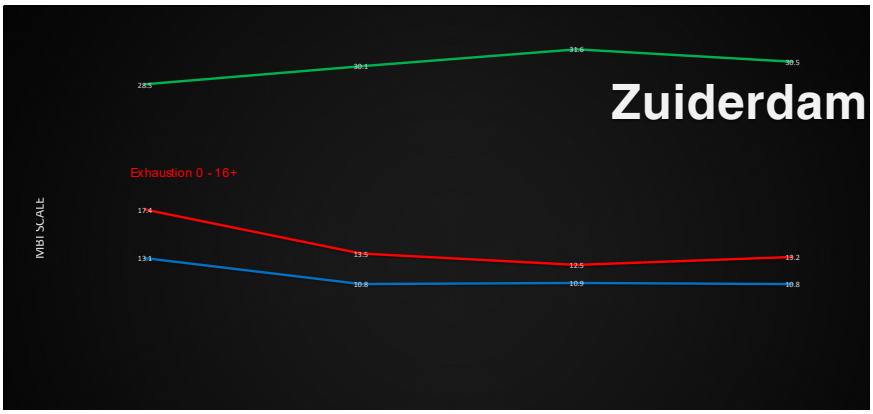
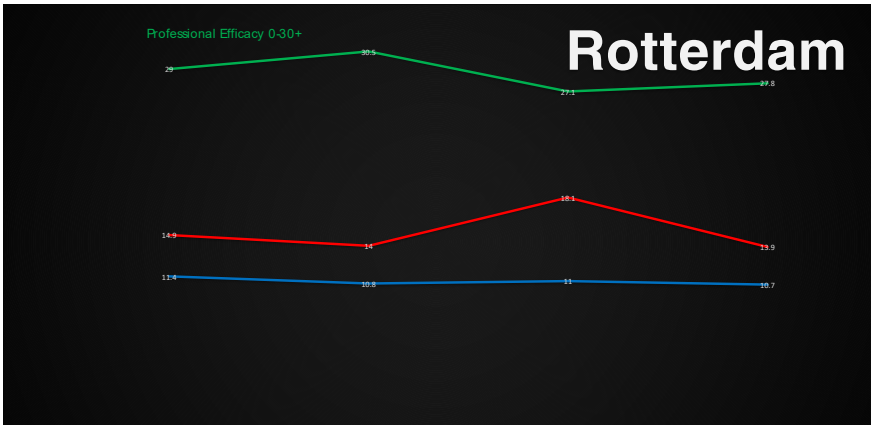
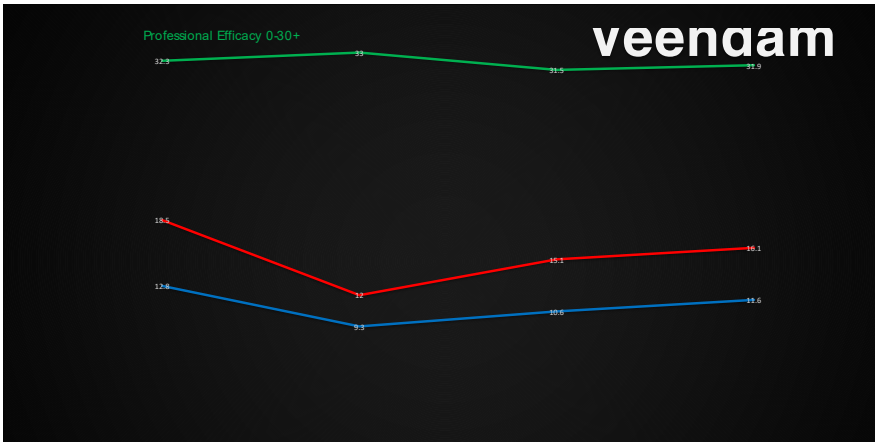
Tackling seafarer exhaustion in the cruise industry: a dyadic approach for mitigating fatigue and burnout







Contribution of ergonomic tools to musculoskeletal disorders in coastal fishing in northern Morocco

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ABSTRACT

Introduction: The prevention of musculoskeletal disorders (MSDs) involves an ergonomic study of the workstation. This approach allows the analysis and understanding of the activity to detect biomechanical factors and other contributing factors in the appearance of these disorders, thus better guiding preventive actions. The objective of this work is to carry out an ergonomic study to analyse the activity and identify the risk factors for MSDs in a high-risk workstation on board a trawler.

Materials and methods: This ergonomic study was carried out on a fisherman working in the hold of a trawler from the port of Tangier (Morocco), who was unloading fish crates and had been identified in a previous MSD screening study as having the highest risk rate among other workstations on board this ship. The study was based on activity analysis, including observation of the fisherman during his work, taking measurements and capturing photos and videos. It was supplemented by three methods of MSD observation and analysis: Occupational Safety and Health Administration: OSHA, (normal score < 5), Rapid Upper Limb Assessment: RULA, (acceptable score between 1 and 2), and Gesture Tracking and Assessment Tool (*Outil de Repérage et d'Évaluation des Gestes*): OREGE, (acceptable score = 1).

Results: The OSHA Score was 12, indicating a significant risk of MSD in the upper limbs. The RULA score was 7, requiring immediate modifications. The OREGE score was 2 for action 1 (bending over to grab the crate with both hands) and for action 2 (carrying and holding the crate with both hands), both of which are not recommended. The score was 3 for action 3 (lifting and handing the crate to the colleague), which is an action to be avoided.

Conclusions: The results pinpointed the biomechanical factors contributing to MSDs in this fisherman and enabled the development of a prevention plan that combines technical measures (such as the use of a pallet truck), organizational measures, and training activities.

Keywords: Fisherman, TMS, Ergonomics, OSHA, RULA, OREGE

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Prescription of medication in the acute treatment of seafarers over a three-year observation period

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ABSTRACT

Introduction: The provision of appropriate healthcare for seafarers is crucial due to their isolated working conditions and limited access to medical facilities. Telemedical maritime assistance relies on prestocked medical chests on board vessels. However, the contents of these medical chests are not globally standardized, and data on their actual use remains limited. This study analyzed prescription patterns over a three-year period to provide an updated overview of medicinal product usage on board vessels.

Methods: A retrospective observational cohort study was conducted, analyzing medical records from ships that received telemedical assistance between 2021 and 2023. Data were obtained from medical reports submitted by onboard medical officers and an internal medical record registry. Variables examined included patient characteristics, vessel type, and prescribed medications. Data analysis focused on identifying prescription trends and assessing the frequency and distribution of medication use across different maritime settings.

Results: Over the three-year study period, 9,458 individual patients received medical assistance, and 11,697 medications were prescribed. The mean patient age was 38.66 years (range: 1 day to 91 years). Analgesics were the most frequently prescribed medication group, accounting for 6,419 (54.9%) prescriptions, followed by antimicrobial medications with 1,752 (15.0%) prescriptions. Other medication categories comprised 3,526 (30.1%) prescriptions.

On average, 22% of patients did not require medication, while 0.2% received treatment with five or more individual drugs. The absolute number of prescriptions increased from 3,094 to 5,029 per year, primarily due to a higher number of patient contacts. Patients aged 30–49 years were the most likely to receive medication. Merchant ships were the most common type of commercial vessel requiring medical assistance, including prescriptions, while training and fishing vessels had the lowest prescription rates. Naloxone and atropine were each used only once, while charcoal, ethyl alcohol, and quinine were not used at all during the study period.

Discussions: The increase in prescribed medications over the study period is likely attributable to Radio Medical Denmark's expanded service contracts, which introduced a larger patient base, including offshore platforms and non-Danish-flagged vessels. Variations in medical chest regulations across different flag states may have also influenced prescribing patterns.

The high use of analgesics reflects the physically demanding nature of maritime work, while the frequent prescription of antibiotics highlights the risk of infections in onboard environments. The rare or absent use of certain medications suggests potential inefficiencies in the stock management of medical chests, warranting further evaluation.

Conclusions: These findings underscore the need for standardizing medical chests to ensure consistent healthcare across vessels. While most medications align with onboard healthcare needs, optimizing stock based on actual usage could enhance efficiency and care quality. Regular updates and a data-driven approach to medicine chest management are essential for maintaining effective and up-to-date maritime healthcare.

Keywords: maritime medicine, seafarer, medicine chest, medicine use

Table 1.

Group numer	Medication	2021		2022		2023	
		Amount	%	Amount	%	Amount	%
1	Oxygen	1	0.03	8	0.22	8	0.16
2	Local anaesthetic	21	0.68	23	0.64	22	0.44
3	Analgesics	1665	53.81	1953	54.64	2801	55.70
4	Allergy, shock and seasickness	117	3.78	133	3.72	224	4.45
5	Antidotes	1	0.03	3	0.08	4	0.08
6	Mental disorder and convulsion	32	1.03	39	1.09	53	1.05
7	Infections	513	16.58	536	15.00	703	13.98
8	Malaria-preventive	3	0.10	5	0.14	9	0.18
9	Cardiac medication	43	1.39	49	1.37	80	1.59
10	Skin medication	159	5.14	201	5.62	232	4.61
11	Desinfectants	30	0.97	37	1.04	31	0.62
12	Gastrointestinal	174	5.62	176	4.92	247	4.91
13	Eyes and ears	272	8.79	301	8.42	443	8.81
14	Gynaecology	1	0.03	2	0.06	3	0.06
15	Astma and common cold	60	1.94	105	2.94	158	3.14
16	Liquid for infusion and similar	3	0.10	3	0.08	11	0.22
	Total	3094		3574		5029	
	Average medications per patient	1.6		1.6		1.6	

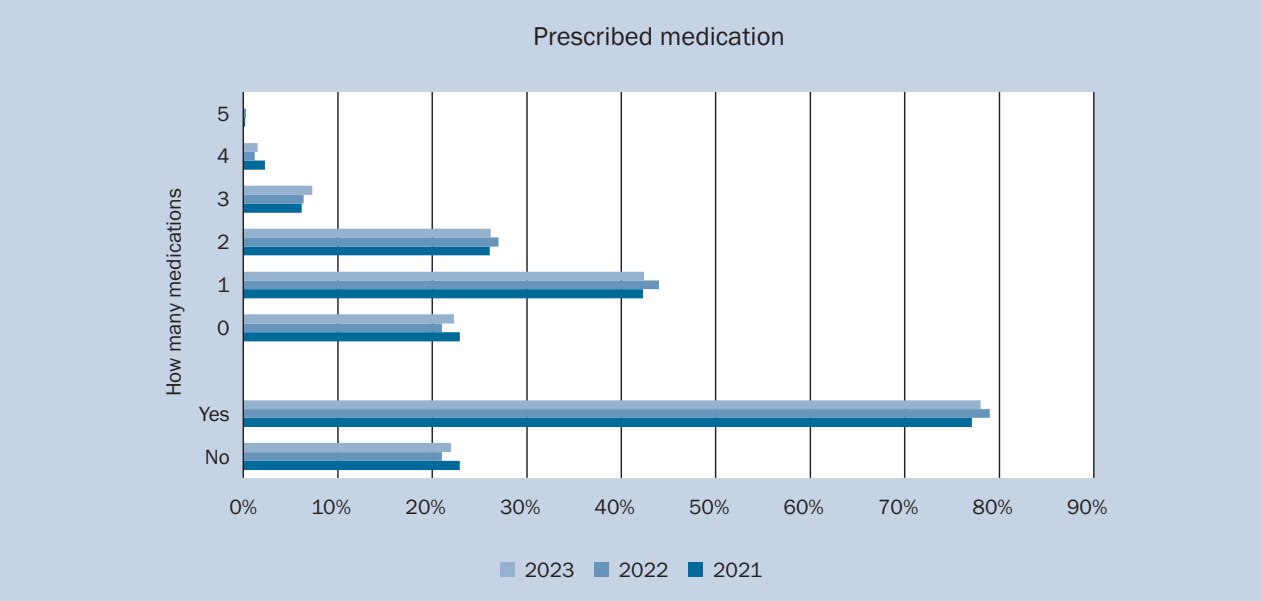

Figure 1.

The impact of the COVID-19 pandemic from a psychosocial, health and preventive perspective

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ABSTRACT

Introduction: The vaccination rate of seafarers during the COVID-19 pandemic was initially low due to various reasons. Along with the well-known crew change crisis, it likely placed a high psychosocial burden on shipping crews. The aim of this work was to assess the vaccination rate, determine triggers for psychosocial symptoms and emphasize preventive-psychological information channels and media for seafarers.

Methods: In March 2022, 583 seafarers and 24 office workers from the same shipping company were surveyed using a questionnaire. It included the standardized Fear of Coronavirus Questionnaire, questions about vaccination status, financial and social stressors as well as information transfer.

Results: A total of 479 (81.3%) participants had been vaccinated. However, office workers were 31 times more likely to have received basic immunization with one booster vaccination than seafarers (CI 12.0–81.9). Seafarers significantly more often feared COVID-19-related health consequences than office workers (73.9% vs. 41.7%, OR 4.0, CI 1.7–9.1). Additionally, fear scores were 2.5 times higher among lower-ranked crew members (ratings) compared to officers (81.2% vs. 63.3%; $p < 0.001$). In addition, seafarers — and among them ratings in particular — rated the pandemic burden regarding social and financial impacts significantly higher — as potential triggers for psychosocial symptoms.

In terms of preventive-psychological information, over 75% of seafarers felt (very) well informed about COVID-19 issues and vaccination. However, they were 20.9 times more interested in further information than office workers (CI 2.8–155.5). For all seafarers, the shipping company, ship personnel and international organizations were the most regularly used sources of information. Other people, emails and messenger platforms were the most frequently used media.

Conclusions: This study indicates that the COVID-19 vaccination rate was lower among seafarers than among the shore-based population. In addition to working conditions, this can lead to increased pandemic-related psychosocial stress. Improving the dissemination of information could contribute to better coping strategies in seafaring. Overall, these findings highlight the importance of supporting seafarers in future crises and the need to improve international strategies for the treatment of seafarers as key workers.

Keywords: seafarers, COVID-19, mental health, knowledge, vaccination

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Helpful lessons from the didactic concepts of shore-based triage exercises for preparing first responders for mass casualty incidents on board cruise ships

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ABSTRACT

Introduction: Mass Casualty Incidents (MCIs) represent a major challenge for emergency responders, particularly in the maritime context. In the event of a disaster on board a cruise ship, up to several thousand people could be affected without the chance to evacuate while on the high seas. Potential causes include a fire breaking out on board or the impending sinking of a ship after a shipwreck. The recent past has also shown that outbreaks of infections — such as Norovirus or Coronavirus — pose particular challenges for emergency services. Often first responders cannot be on-site immediately, in the worst case they can only be there after a few days.
In the event of a mass accident with injured or infected people on board, a particular challenge from a medical perspective is to triage the affected people according to their clinical picture, i.e. assign them to a category of treatment and transport priority. Since there are no studies or experiences specific to triage on board, the question arises as to what experiences exist with triage in land-based exercises for the management of MCIs and to what extent this can be transferred to seafaring.

Methods: A systematic literature search was performed in the electronic databases PubMed, Medline and Psyndex using the following search string: *((mass casualty incident) OR disaster OR (multiple casualty incident) OR (mass casualty event)) AND (training OR preparedness OR simulation OR exercise OR intervention) AND (triage)).* The studies were analysed according to the PRISMA-Statement.

Results: Seventeen studies were included in the review (Table 1). The number of victims within the different simulation exercises varied from three to 50 (median 17 victims). Over 50% of the reviewed studies followed a randomised controlled trial design with pre-post intervention measurement. Sixteen studies (94.1%) collected results during a simulation exercise in which participants were asked to perform realistic triage during a fictional MCI (Table 2). The interventions implemented in the studies were based on a combination of different teaching methods and were always associated with an increase in knowledge and/or practical skills. A large proportion of media-based interventions showed a comparable, sometimes even greater training effect than conventional teaching methods. According to four studies, technical and non-technical aids increase the triage accuracy.

Conclusions: Since an even larger number of victims is expected in maritime settings compared to the results of included land-based studies, it is assumed that triage exercises in a maritime context can have a positive impact in MCI on board cruise ships. In view of the multicultural ship crews, however, it is advisable to offer a broad range of suitable didactic training concepts. These must also be adapted to the ship-specific situation. For example, quick disembarkation may not be feasible, or the escape routes of infected people may need careful coordination to prevent the spread of infection. In summary, it is crucial to practice and train triage and treatment concepts for MCIs on board.

Keywords: triage, didactic concept, intervention, mass casualty incident, vessel

Table 1. Study population and design of the 17 identified references

reference		population				casualties	study design				
author (date)	country	study group	group differentiation (IG vs. CG)	sample size (n)	participation rate	MCI level (number of victims)	control group	follow-up	randomised	pre-test & post-test	cross-over design*
Aghababaeian et al. (2013)	Iran	EMS providers	video education vs. SE	144	100%	III (35)	x	14 days	x	x	
Aluisio et al. (2016)	India	nursing students	CBL vs. SE	60	88%	I (3)	x		x		x
Apiratwarakul et al. (2022)	Thailand	EMS providers	smart glasses supported vs. manual counting of casualties	68	100%	I, II and III (1-50)	X		x		
Bolduc et al. (2017)	Canada	Physicians, nurses, paramedics	electronic vs. manual triage	6	97%	II (30)	x		x		
Cicero et al. (2018)	USA	EMS providers	virtual vs. in-person simulation	123	CG: 67%	I (10)	x		x	x	
Curtis et al. (2017)	USA	emergency medicine residents	VBL vs. lecture	30	pre-post: 87% follow-up: 40%		x	3 months	x	x	
Cuttance et al. (2016)	Australia	paramedics	effects of AM and educational refresher	292	100%	II (20)	x		x	x	
Follmann et al. (2019)	Germany	paramedics	Technical supported vs. manual triage	31	100%	II (12)	x		x		
Follmann et al. (2021)	Germany	students (93%, 29 of them human medicine and 4 dentistry, 4 not specified students); 3 not students	guideline presentation in medicine by augmented reality vs. tablet PC	40	98%	II (30)	x		x		x

Ingrassia et al. (2014)	Italy	medical students	virtual vs. in-person simulation	56		I (10)	x		x	x	x
Jones et al. (2015)	USA	EMS providers	JumpSTART vs. SALT	44	98%	I (10)	x		x		
Motola et al. (2015)	USA	paramedic first responders	video education vs. no intervention	90	100%	I (2)	x		x	x	
Nilsson et al. (2015)	Sweden	firemen	CBL vs. lecture	86	pre-post: 100% follow-up: 59%	II (15)	x	6 months	x	x	
Wiese et al. (2021)	USA	nursing students	virtual vs. in-person simulation	90	89%		x		x	x	x
Wolf et al. (2014)	Germany	EMS providers	ASAV/mSTART	82	93%	II (20)					
Xia et al. (2019)	China	nursing students	intervention vs. no intervention	63	100%	II (25)	x		x	x	
Zheng et al. (2020)	China	Medical undergraduate students	flipped classroom group vs. traditional lecture-based classroom	103	91%	I (10)	x		x		

List of abbreviations

AM — Aide-memoire, ASAV — Amberg-Schwandorf Algorithm for Primary Triage, CBL — Case-Based Learning, CG — Control-Group, EMS — Emergency Medical Service, IG — Intervention-Group, JumpSTART — Jump Simple Triage and Rapid Transport, MCI — Mass-Casualty-Incident, mSTART — modified Simple Triage and Rapid Transport, SALT — Sort, Assess, Lifesaving Interventions, Treat/Transport, SE — Simulation Exercise; VBL — Video based learning

*all participants took part in two interventions, but went through them in a different order

Table 2. Types of interventions in the 17 identified studies

reference	type of intervention									
	simulation		media-based intervention					conventional intervention		
author (date)	as part of intervention	as measuring method	ppt-presentation	video watching	technical support during excercise	video game	online platform	lecture	textbook reading	group discussion, questions
Aghababaeian et al. (2013)	x (CG)			x (IG)						
Aluisio et al. (2016)	x (CBL)	x (SE)						x (all)		x (CBL)
Apiratwarakul et al. (2022)	x (IG)	x (CG)			x (IG)					
Bolduc et al. (2017)		x (all)			x (IG)					
Cicero et al. (2018)	x (CG)	x (all)				x (IG)				
Curtis et al. (2017)		x (all)	x (CG)	x (IG)				x (CG)		
Cuttance et al. (2016)			x (IG)							x (IG)
Follmann et al. (2019)		x (all)			x (IG1 + IG2)					
Follmann et al. (2021)		x (all)			x (all)					
Ingrassia et al. (2014)		x (all)				x (IG)		x (all)		
Jones et al. (2015)		x (all)	x (all)							
Motola et al. (2015)		x (all)		x (IG)						
Nilsson et al. (2015)	x (IG)		x (all)					x (all)		
Wiese et al. (2021)		x (CG)					x (IG)		x (IG)	
Wolf et al. (2014)	x (all)	x (all)						x (all)		
Xia et al. (2019)	x (IG)			x (IG)				x (IG)		x (IG)
Zheng et al. (2020)		x (all)	x (all)	x (all)				x (all)	x (all)	x (all)

List of abbreviations

AM — Aide-memoire, CBL — Case-Based Learning, CG — Control-Group, IG — Intervention-Group, mSTART — Modified Simple Triage and Rapid Transport, ppt — Power Point, SE — Simulation Exercise

"AI-healthy ship" — rethinking health promotion in maritime environments

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ABSTRACT

Introduction: Seafarers live and work for months on board merchant vessels under physically and psychologically challenging conditions. The project "AI-healthy ship" aims to improve health promotion on board and enhance the well-being of crews. Therefore, suitable interventions should be increasingly adapted to current and individual circumstances. The project (16.10.2023–31.05.2028) is funded by the European Regional Development Fund (ERDF) and the city of Hamburg.

Methods: During the course of this project, an application (app) will be developed, tailored to meet the special requirements of maritime environments. It will collect and process data to provide increasingly customised recommendations for a variety of individual health interventions. The app will support seafarers in their health-related self-management using machine learning. For this purpose, a variety of data will be recorded and analysed using AI to estimate the influences of different factors on the well-being of a seafarer (e.g. individual needs, organisational requirements, environmental factors, and vessel-specific conditions; see Fig. 1).

This is done by:

- Utilising a wide range of data sources for investigating the influences of individual, vessel and environmental conditions (e.g. ship movement and noise sensors, external data, wearables, and questionnaires).
- Processing data on an on-board server unit connected to smartphones via crew network.
- Developing a database of various health promotion and recreation measures (at least 50 interventions planned).
- Creating a user-friendly app tailored to the maritime setting, trained in different contexts (land and sea).

The development of the app will be supported by continuous scientific evaluation.

Planned outcomes: A longitudinally designed online survey at the beginning of the project will provide insights into the status quo of health promotion on board. Through ongoing AI training using the data, the app shall make increasingly precise predictions about health developments and recommend fitting and customised interventions.

The project is being carried out in an interdisciplinary collaboration with the software company Lionizers and two shipping companies, Döhle Group and Reederei NORD Group from Hamburg.

Conclusions: The highly innovative system could fill a gap in occupational health management in the maritime sector. It could also be applied in other remote working or living environments that currently lack health promotion options.

Keywords: artificial intelligence (AI), seafarers, health promotion, digitalisation, prevention

CONFLICTS OF INTEREST

The Institute received funding for an Investigator-Initiated Trial (IIT) from a shipping company from 2022 to 2024. The shipping company had no influence on the results of the trial.

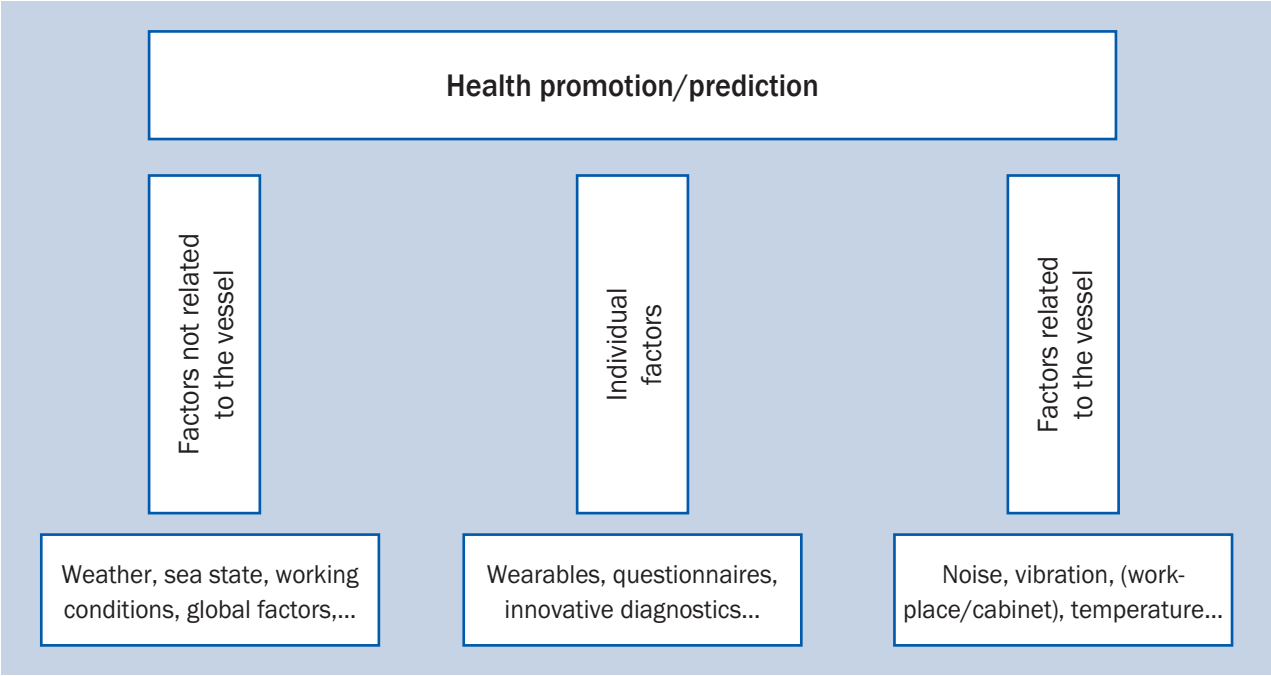

Figure 1. Project elements

Bridging the gap in maritime healthcare: Türkiye's telemedicine approach for seafarers

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General Directorate of Health for Borders and Coasts of Türkiye

ABSTRACT

Introduction: In an increasingly globalized world, ensuring access to timely and high-quality healthcare for seafarers remains a key challenge. The maritime workforce operates in remote and high-risk environments, often far from conventional medical services. In response, Türkiye has implemented a national maritime telemedicine initiative, coordinated by the Ministry of Health's General Directorate of Health for Borders and Coasts. This presentation outlines the structure, performance, and policy relevance of this system in addressing health access disparities at sea and enhancing emergency responsiveness.

Methods: The Tele-Health Center operates through a centralized command framework integrated with Türkiye's national health information infrastructure. The study draws on case reports, operational data, and provider feedback to assess the system's functionality and outcomes. It examines key components including the development of secure teleconsultation platforms, physician training programs, and coordination with entities such as the Coast Guard, Maritime Safety Authorities, and the National Search and Rescue Coordination Centre.

Results: The Tele-Health Center processed approximately 3,000 clinical cases in 2024. About 2,000 originated from international waters. Notably, 18% of all cases required medical evacuation, while the remainder were successfully managed remotely. While the first two categories often reflect the physical demands of maritime work, dental complaints may also indicate limited access to routine care and pre-existing conditions that were not addressed prior to embarkation.

The coordinated workflow allows for rapid triage and, when necessary, emergency deployment of evacuation resources. Integration with the national health information system enables secure, real-time access to patients' medical histories — supporting continuity of care, especially for chronic conditions. Training for authorized telemedicine physicians has also improved the consistency and quality of care delivery. Despite these advances, persistent challenges remain, including limited bandwidth on vessels, jurisdictional complexities, and medico-legal uncertainties in cross-border settings.

Discussion: Türkiye's approach exemplifies how digital health infrastructure can be adapted to maritime contexts and aligned with international frameworks such as the ILO Maritime Labour Convention and WHO telemedicine guidelines. The model demonstrates the potential of telemedicine to reduce avoidable evacuations, strengthen occupational health protections, and promote interoperability across systems and sectors. However, realizing the full potential of maritime telemedicine will require further efforts to develop globally accepted protocols, enhance technical capacities, and establish formal international coordination mechanisms.

Conclusions: Türkiye's Tele-Health Center experience represents a scalable, replicable model that addresses both clinical and operational gaps in seafarers' health services. By uniting technological capacity with structured interagency collaboration, the system contributes to safer, more equitable, and more resilient maritime operations. Future priorities include strengthening international partnerships, improving service coverage through enhanced satellite connectivity, and contributing to global standard-setting in maritime digital health.

Keywords: maritime health, telemedicine, health diplomacy, Türkiye, seafarer health

Factors affecting seafarers response to chemical hazards

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ABSTRACT

Introduction: Exhaust Gas Cleaning Systems, also known as scrubbers, are widely used today to allow the use of high sulphur heavy fuel oil and still comply with the regulations limiting sulphur content in marine fuels. Since 2018, roughly 5,000 ships have installed scrubbers. The technology requires updated skills for safe handling of chemicals and compliance with new regulations. The aim of this study was to review the seafarers' knowledge, attitudes, and practices related to the operation and maintenance of scrubbers.

Methods: Scopus, Web of Science, Google Scholar and grey bibliography were searched for this scoping covering the period 2018–2024. The records were uploaded to EndNote and Rayyan to conclude the selection process. The project was financed by Stiftelsen Sveriges Sjömanshus.

Results: From the 67 identified articles, 4 met the eligibility criteria referring to 954 participants. The articles addressed practices related to environmental compliance, decarbonization, health and safety procedures. Summarised from the included studies the results showed that only 27% of the seafarers read and understood the Material Safety Data Sheet (MSDS) when a new cargo was loaded. Values and beliefs regarding safety climate showed that seafarers had lower perceptions of safety (Mdn = 3.00) than onboard service staff (Mdn = 3.11), p = 0.01. Personal Protective Equipment (PPE) during cargo operation was used by only half of seafarers (53%) and by only (16%) during tank cleaning. The lack of knowledge (34%) as well as the lack of relevant competencies (32%) regarding new technologies were considered barriers to adopting energy efficiency measures on board.

Discussion: The review highlighted that occupational exposure of crew members to scrubbers has been largely overlooked. There is limited literature on factors affecting the compliance with safety interventions across most levels of the Knowledge, Attitude and Practice model. There is a need for extensive global research to fully understand how environmental policies and IMO guidelines impact compliance. Upskilling seafarers in new technologies, efforts to harmonise regulations and active support from management should be prioritised to support policies for green shipping.

Conclusions: Scrubbers pose an additional burden on crews, who must acquire new skills for maintenance and handling.

Training in new technologies helps seafarers perform their duties effectively. Compliance with environmental regulations creates additional stress and workload with adverse effects on ship safety. International organisations should consider the impact of decarbonisation regulations on seafarers' health and well-being.

Keywords: compliance, training, maintenance, knowledge, practices chemical hazards

A 10-year retrospective study of Filipino seafarer medical repatriation rates

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Health Metrics, Inc.

ABSTRACT

Introduction: Our group has compiled two five-year studies on the repatriation rates of Filipino seafarers from 2010 to 2014 and 2015 to 2019. We believe that calculating repatriation rates by dividing the total number of cases by the total number of deployments during the same period can reflect overall seafarer health during their respective contracts at sea. The current study investigates trends and results over a 10-year period.

Materials and methods: We analyzed the total repatriation rates and medical causes of repatriation throughout the 10-year period from various manning agencies in Metro Manila. We classified the different causes of repatriation using ICD-10 classification and categorized them into various disease groups. Repatriation rates in both 5-year periods were also used to compare any differences, using various statistical processes.

Results: The total 10-year repatriation rate was 1.5%, comprising 13,285 repatriation cases and 853,381 deployments. Musculoskeletal diseases and injuries/trauma, as well as gastrointestinal diseases were the most frequent causes of repatriation. There was a significant increase in musculoskeletal and psychiatric/psychological causes of repatriation, and a decrease in injuries/traumas. The distribution and patterns are presented.

Conclusions: A historical review of the 10-year period across the two studies revealed the possible explanations for the differences, including sociopolitical reforms related to disease prevention. Our study shows changes in repatriations that indicate an improvement in trauma rates, and while no method can definitively show statistical correlation or cause and effect, we can safely state that there is a positive correlation between sociopolitical reforms and medical outcomes, particularly, among the Filipino seafarers.

Keywords: medical repatriation rates of Filipino Seafarers

Testing of seafarers' color vision: An update on work in progress

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ABSTRACT

Color discrimination is very important for seafarers: lookout duties require color discrimination, often in conditions of poor visibility both during the day and at night. Analyzing the visual patterns observed and the use of instrumentation and visual displays in all parts of a vessel also relies on adequate color perception. In addition, denotative color codes are used, especially in engineering, for cabling, gas cylinders and visual warning and alarm systems.

Defects in color vision were found to be a cause of maritime accidents in the late nineteenth century. The most common form of defect, found in around 5% of males but rare in females, is an inability to distinguish between red and green, the colors first adopted for oil navigation lights and still used. The defect is genetic and present throughout life. In rare cases, a defect can develop secondary to another medical condition, or a minor level of impairment may become apparent as the eye ages. The seafarer's medical examination, performed according to STCW reg I/9, must ensure that the seafarer meets the color vision standards provided by CIE 143:2001 (International Recommendations for Color Vision Requirements in Transport). According to this international guideline, testing for all seafarers should be done with the standard 24- or 38-plate Ishihara book. (screen-based test)

Applicants who fail the Ishihara test should be re-tested using the Holmes Wright B Lantern test (HWB) (deck) or Farnsworth D15 or City University tests (engineer or radio officer) This recommendation is now considered outdated and the lanterns are no longer manufactured.

In this presentation, according to literature evidence, we provide a review of alternative procedures based on the CAD test (Color Assessment and Diagnosis test) to promote an IMHA consensus conference on this topic

Conclusions: There is a need for new internationally accepted seafarers' color vision testing guidance. Key discussion points remain a) The use of the CAD test as a second-level test (and if so, setting thresholds pattern values specific for seafarers). b) The possible replacement of the Ishiara test with the CAD screening test.

Keywords: color vision; CIE standard; CAD test, seafarers examination

Protocol to detect and follow up seafarers' alcohol dependence and misuse with a review of new alcohol intake biomarkers

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ABSTRACT

Introduction: Over the decades, several studies have shown the relevance of alcohol use among seafarers and fishermen. The dangerous consequences of alcohol consumption during maritime working hours have been well highlighted (e.g., occupational accidents and serious maritime incidents involving crew on duty under the influence of alcohol).

Many legislations require zero-alcohol concentration during working hours for crew members on the bridge or in safety-related roles. The ILO/IMO guidelines on medical examination of seafarers include alcohol abuse as a condition for medical unfitness. In this cases, successful participation in a rehabilitation program with periodic laboratory screening is required.

The aim of the study is to present the Liguria Health Port Authority protocol for detecting alcohol abuse and assessing the effectiveness of rehabilitation programs during seafarers' medical examinations. A review of biomarkers associated with alcohol use, with a particular focus on ethyl glucuronide (EtG) in hair, carbohydrate-deficient transferrin (CDT), and phosphatidylethanol (PEth) is provided.

Methods: In the context of alcohol abuse, a biomarker serves as a precise indicator of an individual's drinking pattern or predisposition to alcohol abuse and addiction. Markers of excessive alcohol intake can be grouped into two types: A) Indicators of alcohol-induced organ damage, B) Indicators of alcohol consumption. In particular EtG, CDT and the new PEth provide an indication of chronic alcohol use.

The initial screening for seafarers' alcohol dependence is carried out using the Alcohol Use Disorders Identification Test (AUDIT), a 10-item screening tool developed by the World Health Organization to assess alcohol consumption, drinking behaviors, and alcohol-related problems

Discussion: For all seafarers undergoing the STCW medical examination, the AUDIT WHO screening questionnaire is administered, and traditional alcohol intake biomarkers, plus CDT, are evaluated. Seafarers are also tested using a new biological biomarker (EtG on keratin matrix) if: it is their first examination (enter career), they have a positive AUDIT screening (score > 8), traditional biomarkers values of are of range, there is a report of alcohol abuse from traffic police or shipping company doctors. Seafarers suspected of alcohol abuse are referred to specialized alcohol addiction support services for rehabilitation treatment, and follow-up is conducted through periodic reassessments of EtG on keratin matrix. In the near future, we plan to innovate our protocol by replacing the CDT biomarker with Peth, which is more sensitive and easier to perform using a capillary blood sample.

Conclusions: Effective screening and management of seafarers' alcohol abuse/dependence are crucial for ship safety, prevention of maritime occupational accidents, and ensuring compliance with STCW medical fitness guidelines. No trustworthy medical diagnosis of alcohol abuse/dependence can be made solely from any recognized laboratory marker, unless the patient undergoes medical evaluation (seafarer doctors have a key role in this process). On the other hand, a medical diagnosis cannot be made without reliable lab tests. Given this, new alcohol consumption biomarkers, such as EtG and PEth, should be considered in the next revision of ILO/IMO guidelines for seafarers' medical examination.

Keywords: alcohol abuse, alcohol dependance, alcohol intake biomarkers, ethyl glucuronide (EtG), carbohydrate-deficient transferrin, phosphatidylethanol

Poisoning on board: consultation and medical management

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ABSTRACT

Introduction: The French TeleMedical Assistance Service (TMAS) provides medical assistance to any ship requesting help at sea. At the end of the consultation, the doctor decides whether to provide on-board treatment, arrange disembarkation, or initiate patient evacuation. There is insufficient epidemiological data on the management of poisoning in the maritime environment. Our main objective was to describe the care pathway for vessels following a teleconsultation with the French TMAS for suspected acute intoxication.

Materials and methods: We conducted a retrospective cross-sectional descriptive epidemiological study including patients who consulted the French TMAS for suspected acute intoxication between 1 January 2017 and 31 August 2022. This research was carried out in compliance with French regulations. Patients were classified according to whether the final decision was 'on-board' or 'off-board' care. All the data described was then compared between these two populations. Statistical analysis was performed using SAS 9.2® software (SAS Institute Cary, NC). Qualitative variables were expressed as numbers and percentages. Quantitative variables were expressed as means and standard deviations. A chi-squared test was used to compare categorical variables.

Results: A total of 129 patients were included in our study. Eighty-eight patients were treated on board (68%); 41 patients were disembarked or evacuated (32%). The differences in data according to the decision included: the patient's function on board, the type of vessel, the availability of medical supplies, the distance from the coast, the severity of the patient's condition, the circumstances of the intoxication, and the duration of telehealth monitoring. Cleaning products were the main cause of poisoning (43%, n = 56). The main route of exposure, all related to a maintenance product, was ocular (43%, n = 56), for which 16 patients required disembarkation or evacuation (12%).

Conclusions: Understanding and preventing poisoning on board ships is a major public health issue for the maritime sector. By highlighting the high prevalence of chemical burns to the eyes among on-board intoxications, our study has helped identify areas of research that have been shared with the IMP (French Maritime Institute of Prevention) and the SSGM (French Health Service for Seafarers). The prevention of eye injuries among seafarers is a key focus of a national prevention campaign, supported by the IMP, SSGM, and French TMAS.

Keywords: poisoning, maritime environment, cleaning products, ocular exposure, chemical burns, eye injuries

A registry-based study on medical selection of Norwegian seafarers and risk of acute admissions to somatic hospitals

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ABSTRACT

Introduction: Seafarers are required to hold a valid health certificate for work aboard ships. Health certificates are issued by recognized seafarer doctors and include full health certificates, time-limited or restricted health certificates, and declarations of unfitness. In this study, we investigated whether the assessment of medical fitness made by seafarer doctors could predict the risk of acute admissions to somatic hospitals within a two-year period.

Methods: The study population consisted of all Norwegian seafarers aged 18–70 years who visited a seafarer doctor in Norway between 2018 and 2019 (n = 43,758). Data on acute somatic hospital admissions in Norway were collected from the Norwegian Patient Registry. Differences in the risk of hospital admissions between the groups were expressed as hazard ratios (HR) and analyzed using Cox regression models. To satisfy the proportional hazards assumption, analyses were performed for two time periods: 0–3 months and 3–24 months.

Results: The two-year cumulative incidence of acute hospital admissions for seafarers deemed unfit was 19.7% (95% CI: 16.3%–23.6%), compared to 16.4% (95% CI: 14.7%–18.2%) for those who received a time-limited health certificate, and 7.2% (95% CI: 7.0%–7.5%) for seafarers who received a full health certificate. The crude risk of acute somatic admissions was more than twice as high for those who received a time-limited health certificate compared to those who received a full health certificate, in both follow-up time periods: 0-3 months (HR = 2.02, 95% CI: 1.39–2.93) and 3–24 months (HR = 2.45, 95% CI: 2.15–2.79). This trend was also observed for seafarers declared unfit during the 3–24 months follow-up period (HR = 2.63, 95% CI: 2.07–3.34). However, the risk was more than 5 times higher in the first 3 months (HR = 5.13, 95% CI: 3.27–8.04). Adjustment for potential confounders, including age, gender, level of education and centrality of residence (proximity of healthcare services) did not change our conclusions.

Discussion: The elevated risk of hospital admission for seafarers declared unfit by a seafarer's doctor was most pronounced within the first three months after consultation. This indicates that seafarer doctors may have identified preexisting medical conditions that contributed to acute health events necessitating hospitalization.

Conclusions: Seafarers who received time-limited health certificates, and those declared unfit, face a significantly higher risk of acute somatic admissions compared to seafarers who received full health certificates. Our findings emphasize the importance of health assessments for seafarers to ensure safety on board.

Keywords: seafarer health, seafarers, register linkage, medical examinations, hospitalizations

Navigating through anxiety amongst seafarers by leveraging telehealth platforms and integrating proven coping techniques

Radhika Shah, Krutika Khuman, Prasad Shetty

3Cube Medicare Pvt Ltd

ABSTRACT

Introduction: Mental health challenges, particularly anxiety and depression, worsen due to unique marine occupational stressors such as prolonged isolation, unpredictable schedules, and high-pressure environments. This paper explores the role of counselling and Cognitive Behavioural Therapy (CBT) techniques in addressing these critical issues within the maritime sector.

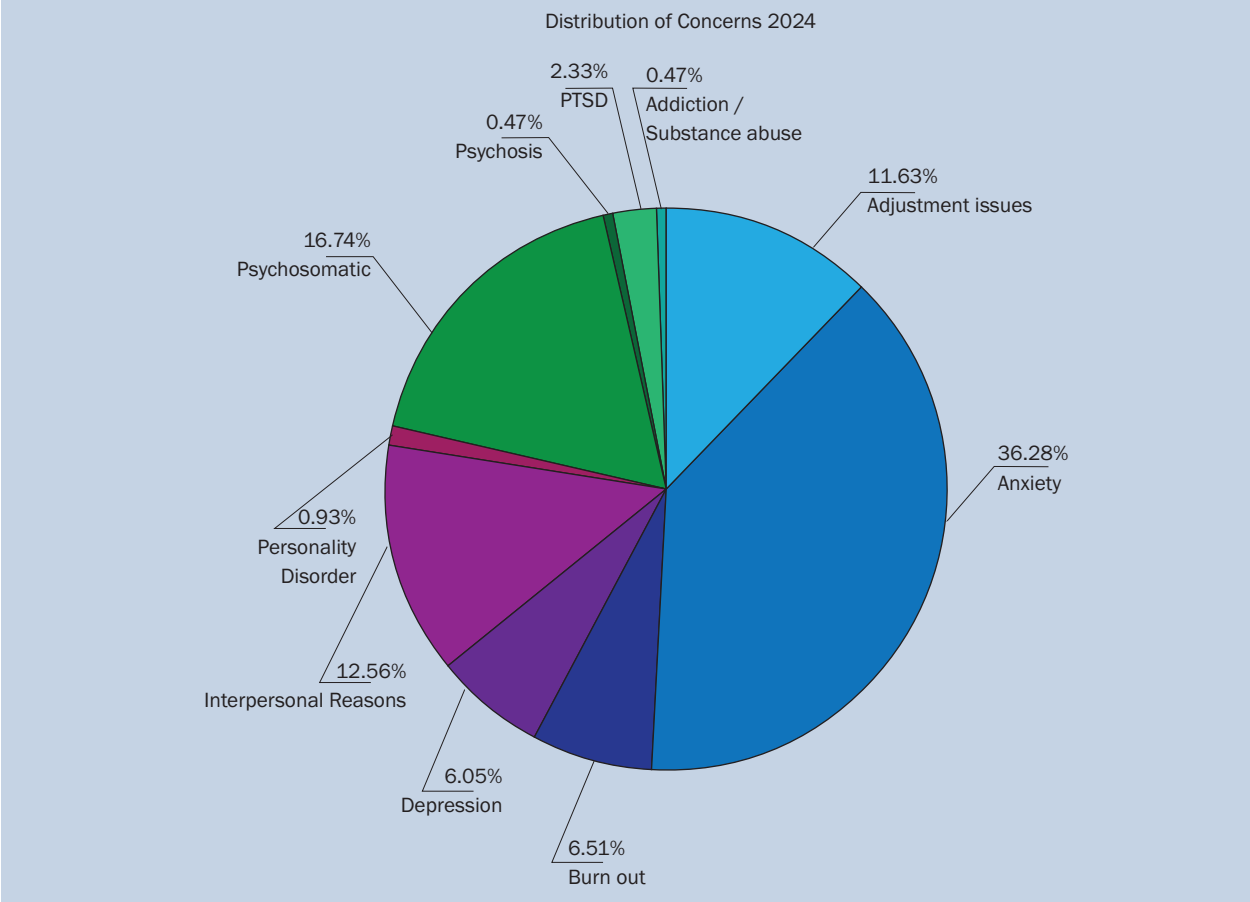
Methods: In this study, focusing on anxiety, evidence-based practices were utilized to tailor counselling approaches and CBT interventions, including cognitive restructuring, mindfulness training, and stress management strategies. These techniques were implemented and evaluated in telehealth settings to address seafarers' mental health needs while considering logistical challenges on board vessels.

Results: The study identified three primary stressors contributing to anxiety among seafarers who sought support: work-related stress (40%), health concerns (30%), and family/personal issues (30%). Telehealth interventions led to significant improvements, with 75% of participants reporting reduced anxiety, better sleep quality, and improved focus. Additionally, 67% of participants considering early sign-offs successfully completed their contracts after counselling. Preferred techniques included breathing exercises (40%), CBT strategies (35%), and mindfulness practices (25%). These findings highlight the effectiveness of tailored mental health support in improving crew well-being and operational performance.

Discussion: This paper also highlights practical applications, including the integration of mental health resources into on-board protocols and training programs for maritime professionals. By focusing on early intervention and fostering resilience, these techniques can significantly reduce the psychological burden on individuals, improve overall well-being, and enhance operational safety and productivity.

Conclusions: This study underscores the importance of prioritizing mental health as a key component of maritime health and wellbeing initiatives. By leveraging telehealth platforms and integrating proven techniques such as CBT and training for dealing with mental health problems, the maritime sector can enhance the overall well-being, safety, and productivity of its workforce.

Keywords: mental health at sea, duty of care, anxiety


Distribution of Concerns 2024
2.33%
PTSD
0.47%
Addiction /
Substance abuse
0.47%
Psychosis
11.63%
Adjustment issues
16.74%
Psychosomatic
36.28%
Anxiety
0.93%
Personality
Disorder
12.56%
Interpersonal Reasons
6.05%
Depression
6.51%
Burn out

Aggression, psychological violence and sexual harassment in seafarers in France

David Lucas[1], Leticia Sanz-Trepiana[2], Camille Jégo[3], Emmanuelle Bost[1], Emmanuel Fort[2]

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ABSTRACT

Introduction: In a working environment that is predominantly male, physically demanding, and characterised by difficult conditions, and occupational exposures, verbal and/or physical aggressions can be more frequent than in other sectors. Seafarers are increasingly reporting insulting, violent or sexist behaviour. The main types of abuse experienced on board can be verbal and/or physical aggression, as well as humiliation, whether in private or in front of others. Sexual harassment of women remains a very worrying subject.

Methods: This was a retrospective observational study, conducted as part of the professional monitoring of seafarers.

The target population included adult seafarers attending a fitness-to-sail visit. Participants were recruited from seafarers aged 18 and older who were monitored by one of the French seafarers' health services or local centres. The inclusion period spanned 4 months between, January and April 2023.

All data were was collected using a self-questionnaire.

Results: A total of 788 fully completed questionnaires were analysed. Of these, 139 (17.6%) respondents were women. The average age was 41.4 years (standard deviation = 11.7). Breakdown of seafarers by sector was as follows: 61% of seafarers were from the merchant navy, 19.8% from pleasure boating, 14.7% from fishing, and 4.4% from French Maritime Academy (students or instructors). The main personnel categories represented were sailors (27.9%), followed by deck officers (27.8%), general officers (18.5%), non-seafarers (12.2%), and engine officers (10.2%). Students (3.4%) constituted the smallest group.

Over the past 12 months, 24.5% of seafarers reported being victims of work-related verbal aggression, with a significant gender difference (21.1% for men vs. 41.0% for women, p = 0.001). Additionally, 3.2% of seafarers experienced work-related physical aggression (2.6% for men and 5.8% for women, NS).

The vast majority of hostile behaviours came from men (79.1%), with two-thirds from superiors and half from colleagues. Women were more frequently targeted by colleagues (69.6%) than men (44.4%) (p = 0.04).

During the entire working life , 65.5% of women and 38.2% of men reported harassment (p = 0.001), with a third of cases involving sexist harassment.

Less than 7% of seafarers had ever sought professional care following traumatic situations and/or aggression, with women seeking care more frequently than men (14.4% versus 5.1%, p = 0.001). Most of these professionals were psychologists (60.4%) and general practitioners (50.9%).

Discussion: This original study quantifies the high prevalence of aggression, psychological abuse and sexual harassment experienced by French seafarers. Women are significantly more affected, regardless of the type of violence. Prevention and support policies, along with a strong commitment from public authorities and stakeholders, are essential to curb this phenomenon, which is deeply rooted in this male-dominated sector.

Conclusions: The findings on sexual violence against women are particularly concerning. The study reveals that sexist harassment is widespread among seafarers, and that sexual harassment remains prevalent.

Correlation analysis between MMPI profile and stress levels among young seafarers in pre-employment health checkups at Puri Medika Medical Check-Up Center Maritime Clinic, Jakarta, Indonesia

Lestari Raharjo

Puri Medika Hospital

ABSTRACT

Introduction: study aims to analyze the correlation between the Minnesota Multiphasic Personality Inventory (MMPI) profile and stress levels among young seafarers during pre-employment health checkups. Seafaring is one of the professions that demands high physical and mental readiness. The requirements for working in the maritime field are extremely high, requiring optimal mental preparation to handle work pressure, isolation, and stressful environmental conditions. Therefore, pre-employment health checkups are critical for evaluating the psychological condition of seafarers before they board the ship.

Methods: The MMPI personality profile is used as a tool to assess the psychological aspects and identify the potential for mental health problems, which can affect an individual's readiness to handle work stress.

This research employs a quantitative approach with a correlational design, Participants included 120 individuals age 18–25 years who were undergoing pre-employment health checkups at Maritime Clinic, Puri Medika Medical Check-Up Center in Jakarta, Indonesia. The instruments used in this study were the MMPI-2 test to assess clinical scales and the perceived stress scale (PSS) to measure stress levels. The data collected were processed through psychological test administered during the pre-employment health checkup sessions. Pearson correlation analysis was used to determine the relationship between the MMPI profile and stress levels.

Results: The results of the study indicate a significant correlation between certain MMPI scales and the stress levels experienced by young seafarers. Clinical scales such as Depression (D), Anxiety (Pt), and Schizophrenia (Sc) show a strong positive correlation with stress levels, with a significance value of $p < 0,05$. This suggests that individuals with higher scores on these scales tend to report higher stress levels. Conversely, the hypomania (Ma) scale has a negative correlation with stress levels, indicating that individuals with higher energy levels tend to report lower stress levels.

This finding reveals that the personality profile demonstrated through the MMPI can serve as an important predictor for assessing stress risk among young seafarers. This has significant implications for the selection process and mental preparation of prospective sailors before they are placed on ships. Self-identification of potential psychological issues can assist maritime institutions in providing the necessary interventions, such as stress management programs, psychological counseling, or coping strategy training, to help sailors prepare for stressors.

Conclusions: This research demonstrates a significant relationship between the MMPI profile and stress levels in young sailors during pre-employment health examinations. Specific scales in the MMPI can be used to detect individuals who are potentially experiencing high stress levels, so psychological interventions can be carried out proactively. This study recommends that psychological evaluations using the MMPI be made an integral part of pre-employment health examinations for sailors to ensure their mental readiness in facing the challenges of maritime work. Future research is expected to explore

other factors influencing stress levels, such as social support, work experience, and environmental conditions on board ships.

Keywords: pre-employment health examination, young sailors, mental readiness, MMPI, maritime industry, sailors health

1. Table. Distribution of MMPI Scales and Stress Levels

MMPI Profile (scale)	Average MMPI Score	Category (normal, high)	Average Stress Level (DASS 21)
Scale1 (Hypochondriasis)	65	High	18 (Moderate)
Scale 2 (Depression)	70	High	22 (Moderate-High)
Scale 3 (Hysteria)	55	Normal	12 (Low-Moderate)
Scale 4 (Psychopathy)	50	Normal	10 (Low)
...	...	...	...

Notes:

MMPI profiles are measured using standard T-score interpretations

Stress levels are measured using the DASS-21 scale

2. Graph: Relationship Between MMPI Profiles and Stress Levels

Scatter Plot example: Scatter plot with a regression line showing the correlation between MMPI scores (X-axis) and stress levels (Y-axis)

- **X-axis: MMPI score for various scales (e.g., Scale 1 = 65)**
- **Y-axis: Average stress levels (DASS-21)**
- **Visualisation:** A rising regression line indicates a positive correlation. For example, the line shows a positive relationship (higher MMPI score are associated with higher stress levels)

The effectiveness of pre-employment health screenings on the readiness of seafarers over 50 years old through pulmonary function assessment using spirometry in various weather conditions at Puri Medika Medical Check-Up Center Maritime Clinic, Jakarta, Indonesia

Lestari Raharjo

Puri Medika Hospital

ABSTRACT

Pre-employment health screenings for seafarers over 50 years old are critical for ensuring their readiness to perform tasks on board. One of the essential health aspects to assess is lung function, which can impact work performance, particularly in varied weather conditions. This study aims to evaluate the effectiveness of pre-employment health screenings in assessing the readiness of seafarers over 50 years old through pulmonary function evaluation using spirometry under different weather conditions.

The research methodology follows an observational cross-sectional approach, involving 100 seafarers over 50 years old from various regions. Subjects underwent pre-employment health screenings, including spirometry-based pulmonary function assessment. Spirometry results were measured using forced expiratory volume in one second (FEV1), forced vital capacity (FVC), and the FEV1/FVC ratio.

Additionally, research subjects were asked to complete a questionnaire about their experiences working in weather conditions such as storms, heavy rain, or high waves.

The data were analyzed to identify the relationship between pulmonary function test results and the readiness of seafarers to cope with diverse weather conditions. Work readiness was assessed based on physical ability to perform tasks, respiratory health complaints, and the duration and intensity of work performed under varying weather conditions. Statistical analysis was conducted to determine whether there were significant differences between spirometry results and the work readiness of seafarers over 50 years old.

The research findings indicate that pulmonary function assessments using spirometry provide a clear depiction of lung capacity among seafarers over 50 years old. It was observed that seafarers with better spirometry results, showing healthier lung function, demonstrated higher work readiness, especially when facing extreme weather.

Conversely, seafarers with reduced lung function were more likely to experience health issues and difficulties completing tasks, particularly in adverse weather conditions.

This study also found that seafarers with a history of smoking or respiratory disease, such as asthma or chronic bronchitis, showed significant lung function decline, which impacted their work readiness. Weather factors, particularly high temperatures or humidity, also affect the comfort and efficiency of seafarers, especially those with limited lung function.

The conclusion of this study is that pre-employment health screenings, particularly lung function assessments using spirometry, play an important role in determining the work readiness of seafarers over 50 years old. These screenings serve as an effective indicator for detecting health risks that may impact seafarers performance in facing various weather conditions.

Therefore, it is recommended that pre-employment health screenings, including spirometry, become a standard procedure for seafarers over 50 years old to ensure their safety and health while working at sea.

Keywords: pre-employment health screening, work readiness, seafarers over 50 years old, lung function, extreme weather

1. Table of pulmonary function assessment results based on weather conditions

This table presents a comparison of spirometry results among seafarers aged over 50 years under various weather conditions (clear, windy, rainy)

Weather condition	Number of respondents	Average FVC (% predicted)	Average FEVI (% predicted)	Work readiness (%)
Clear	50	85%	80%	90%
Windy	50	78%	75%	85%
Rainy	50	70%	68%	80%

2. Graph of pulmonary function and work readiness comparison

The graph illustrates the relationship between spirometry result (FVC and FEVI) and the percentage of work readiness under various weather conditions

— **X-axis:** Weather Condition (Clear, Windy, Rainy)
— **Left Y- axis:** Average Spirometry Results (% predicted)
— **Right Y-axis:** Work Readiness (%)
— Two lines or bars:
• Spirometry results (FVC and FEVI) (represented by two different colors)
• Work readiness

Int Marit Health 2025; 76 (suppl. 1): 1–101

The lifelong shaping of seafarers: A qualitative study of seafarers' health-related behavior and lifestyle

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Medical Office Denmark

ABSTRACT

Introduction: This project investigates why seafarers are at high risk of developing lifestyle diseases. It examines whether this risk is due to the specific characteristics of the profession, which shape seafarers' daily routines, or whether certain groups with lifestyle preferences choose to work at sea. Seafarers must be physically fit to carry out their duties, their health is vital. The project explores how seafarers' work environment, structural conditions and social habits influence their lifestyles and risks of diseases.

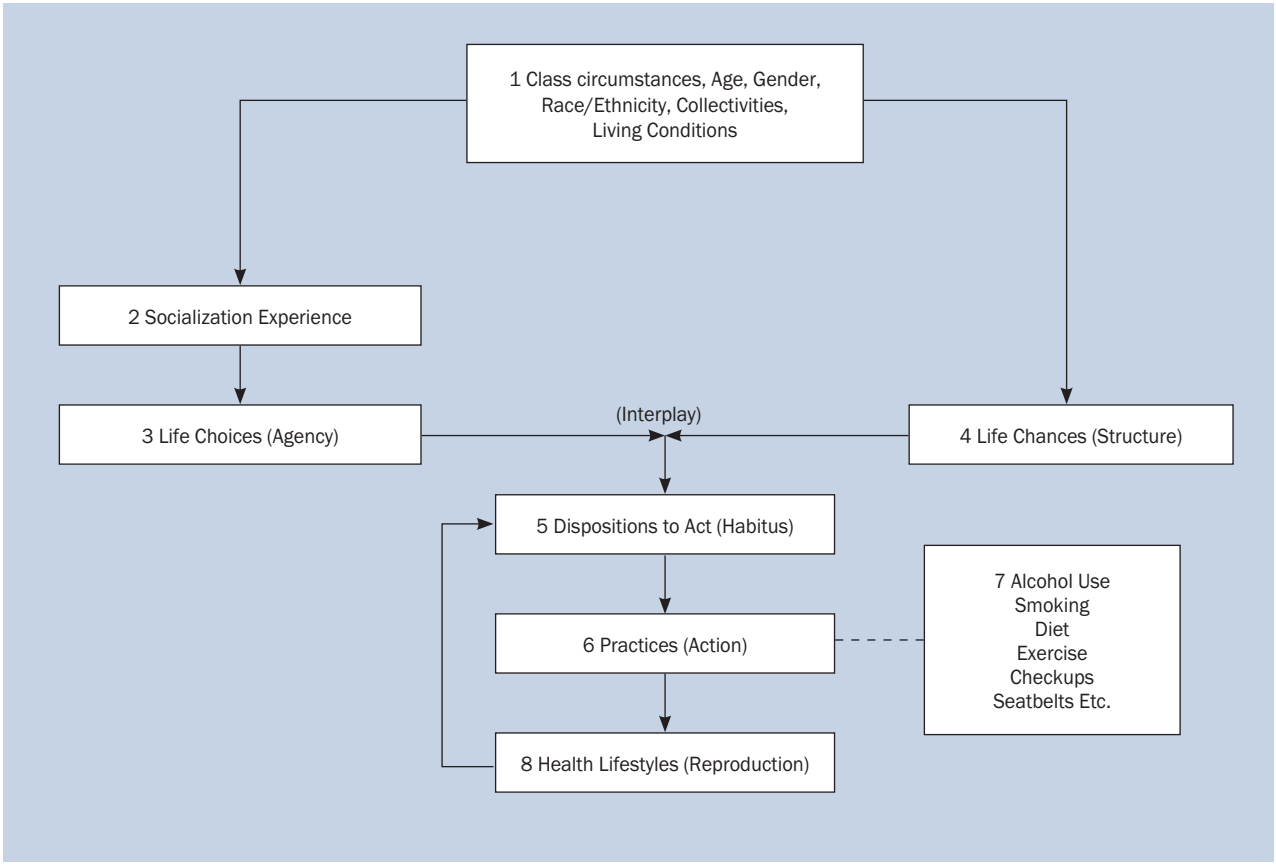
Methods: The study employs a qualitative interactionist approach, including six interviews with seafarers and a field observation aboard a ship. This combination of methods provides a nuanced insight into the social and structural factors shaping seafarers' daily lives and potential health risks.

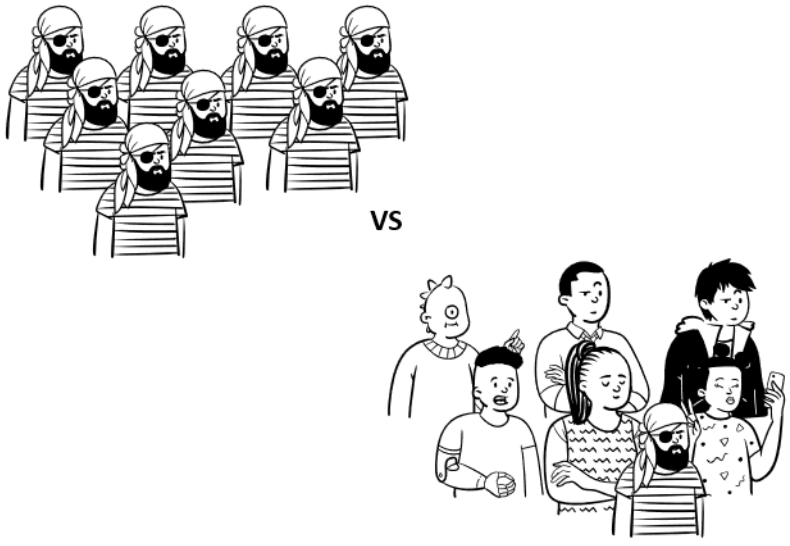
Results: It is found that seafarers' health and lifestyle are influenced by a complex interaction of personal preferences, social norms, and structural conditions. These factors contribute to the risk of lifestyle diseases. Both individual choices and social frameworks on board shape the seafarer's routines and habits, which can be beneficial as well as challenging to their health. The profession molds the seafarer while offering frameworks that either support or limit healthy lifestyle choices.

Discussion: The findings of this study highlight the complex interaction between personal preferences, social norms, and structural conditions that shape seafarers' health. These factors not only contribute to health risks but also underscore the importance of diversifying the recruitment process. Traditionally, seafarers come from specific social classes, which can perpetuate certain health-related behaviors and attitudes. By broadening recruitment to include individuals from a wider range of social backgrounds, the maritime industry could foster a more diverse workforce with varying perspectives on health and wellness. This could help challenge the prevailing masculine norms and rigid social structures on board, promoting healthier practices and reducing the stigma around seeking medical help. Moreover, addressing structural conditions, such as long working hours and limited access to healthcare, is crucial for creating a healthier work environment for all seafarers. This research suggests that future health interventions should consider not only the individual's behavior but also the broader social context and how diverse recruitment practices could influence health outcomes in the maritime industry.

Conclusions: The results highlight how the structural dimensions of the maritime industry contribute to seafarers' lifestyle choices and health risks. The seafarers' reflections on work-related health problems and the fear of illness reveal how the physical and mental demands of maritime life can lead to health issues. Therefore, health and work should not be seen as purely individual choices but as shaped by the social environment, norms, values, and opportunities surrounding seafarers. Promoting healthy behavior in maritime professions requires addressing both the structural conditions and social norms that influence health prioritization. The study shows that seafarers' lives are deeply shaped by social structural dimensions that influence their agency, lifestyle, health choices, and the risk of lifestyle diseases. Reducing this risk requires addressing not only individual behavior but also the broader socio-structural conditions affecting health choices. This means considering the working environment, social norms, and economic structure when designing health prevention actions for life at sea.

Keywords: lifestyle, health choices, risk of lifestyle diseases, seafarer


1 Class circumstances, Age, Gender, Race/Ethnicity, Collectivities, Living Conditions
2 Socialization Experience
3 Life Choices (Agency)
(Interplay)
4 Life Chances (Structure)
5 Dispositions to Act (Habitus)
6 Practices (Action)
7 Alcohol Use
Smoking
Diet
Exercise
Checkups
Seatbelts Etc.
8 Health Lifestyles (Reproduction)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Int Marit Health 2025; 76 (suppl. 1): 1–101

Hearing conservation and audiometric surveillance in commercial shipping: — Why and how?

Imogen Stilz

Shell Health, Shell International, London, UK

ABSTRACT

Introduction: Noise induced hearing loss (NIHL) is a known risk for workers exposed to occupational noise, including seafarers. Where available, data from national studies demonstrates a significantly increased risk of NIHL in seafarers, and P&I club data suggests increasing hearing loss in the seafaring population.

The internationally accepted general approach for managing noise exposure risk ashore includes risk assessment through noise monitoring, and a hierarchy of controls focused on controlling the risk at source. When the use of personal hearing protection equipment (PPE) is necessary audiometric surveillance is commonly required, because PPE may not be effective due to poor fit or user error. The International Maritime Organisation has adopted the Code on Noise Levels in board ship in 2012, providing international standards for protection seafarers from noise exposure, including risk assessment and risk management methods. Flag-state adoptions of the code vary in detail, but many do not include mandatory audiometric surveillance.

Methods and results: A narrative approach was used to describe the implementation of a hearing conservation programme including audiometric surveillance in a commercial shipping fleet spanning across multiple states and various seafarer nationalities. It covers the risk assessment process, the exposure and effect modelling, and the practical implementation of the hierarchy of controls principle. It also addresses practical considerations for an audiometric surveillance programme in a diverse and globally dispersed international seafarer population.

The first-year results of the audiometric surveillance programme are presented.

Discussion: A hearing conservation programme including audiometric surveillance in international commercial shipping is feasible and can confirm whether seafarers' risk of NIHL is effectively controlled. Close integration of the surveillance programme into existing processes for risk management on board and into periodic seafarer medical examination is essential.

Keywords: noise induced hearing loss, health surveillance, maritime occupational health, health hazard management, preventative medicine

Are seafarers extraterrestrials?

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ABSTRACT

Introduction: PTSD in high risk occupational population is often studied with the goal of improving their ability to cope with traumatic event during work. Examination of the occupational culture among seafarers shows that the vulnerability to stress disorders among seafarers cannot be explain solely by work-related risk factors. Indeed, seafarers develop very strong coping mechanisms to handle adverse situations during their careers, but they may be vulnerable upon returning home or when traumatic events originate from crew members. This thesis proposes an alternative approach to assessing risk factors for PTSD vulnerability to prevent confusion with psychiatric fragility and to improve clinical care among seafarers.

Methods: Three studies were conducted to examine seafarers' representation of work and its incidence on PTSD through qualitative and quantitative methods, resilience factors through quantitative methods and coping strategies through qualitative methods to assess their protective effect against PTSD symptoms. Finally, the last study examines events that pose the higher risk of PTSD development.

Results: The results highlight that the nature of work representation impacts PTSD development. More precisely, work representation is conditioned by two important factors : cohesion among crew members and the rupture between occupational life and personal life. These two factors contribute to vulnerability among seafarers due to a transformation of work abilities influenced by personality traits. This process increases the risk of confusion between fragility and vulnerability due to a poor evaluation of the complex environment and stereotypical representation of seafarers by carers.

Conclusions: Considering occupational culture among seafarers helps to understand the importance of crew support in preventing PTSD development and the need to be attentive to returning home, which can be a vulnerable moment because of the rupture between maritime culture and land-based culture.

Replacement of urine dipstick test by glucometers

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ABSTRACT

Introduction: Seafarers and maritime students are at increased risk of prediabetes, type 2 diabetes and hypertension. Evidence show that prediabetes can be reversed through lifestyle changes, forming the basis of the *Prediabetes-Remission Study.* The American Diabetes Association (ADA) suggests checking A1c and fasting blood glucose levels. Unfortunately, maritime authorities recommend urine dipstick testing but not A1c or fasting glucose; therefore, prediabetes and type 2 diabetes are often misdiagnosed in the maritime medical clinics. The goals of this study are to:

1. Determine the validity of the urine dipstick in the clinic compared with the A1c test.
2. Assess the accuracy of the glucometer compared to the A1c test based on the current research.
3. Develop automatic recoding of the clinical data to facilitate the diagnostics and research.

Methods:

1. Urine dipstick testing was applied and compared with A1c levels in a sample of seafarers (n=306).
2. The accuracy of urine dipstick testing was compared to A1c testing based on literature review..
3. An automatic recalculation of diagnoses was developed in Excel to facilitate diagnostics.

Results:

1. Among the sample (n = 139, 46%) with normal A1c values, none had positive urine glucose results.
   Among seafarers with prediabetes (n = 124, 41%), none had positive urine dipstick test.
   Based on the urine dipstick test, only 2 of n = 41 (4.9%) with type 2 diabetes was identified and invited for prevention and further treatment (Table 1).
2. Due to lack of accuracy, the literature advices against using urine dipstick testing for prediabetes/diabetes mellitus screening (1–4).
3. Recoding of clinical data Link1

Discussion: The comparison of A1c and urine dipstick results revealed concerning findings (Table 1). Using urine dipstick testing, nearly none of the (n = 167) seafarers with prediabetes or type 2 diabetes (54.5%) were informed of their condition, despite the possibility of normalizing blood glucose levels. Implementing the cost-effective glucometer finger-prick test (costing 0.20–0.27 USD per test) would allow seafarers to embark on their voyages without delay. Patients with elevated glucometer readings should be referred to general practitioners for diagnosis and control.

The use of portable glucometer is based on growing evidence of diagnostic accuracy: Chandra et al. found the diagnostic accuracy of two glucometers to be reliable across a wide range of blood glucose values (5). Katz et al. tested two types of portable glucose meters and found both systems accurate across a wide glucose range (6). Chen et al. evaluated the accuracy of four blood glucose monitoring systems and confirmed that all met the ISO accuracy criteria (7).

Conclusions: The urine dipstick test should not be used for prediabetes/type 2 diabetes diagnosis. Instead, A1c or fasting/postprandial glucometer finger-prick examination should be applied at all health

examinations. This is to ensure that the seafarers are well informed that they can regain normal blood sugar levels, if relevant. The Excel automatic coding of clinical data should be applied in the clinics for precise diagnostics to improve the data for research.

Keywords: prediabetes, type 2 diabetes mellitus, glucometer, remission, coaching

ACKNOWLEDGMENTS

To all colleagues, friends and the seafarer's welfare organizations who supported strengthening the learning of chronic non-infective diseases, like pre-diabetes, diabetes mellitus, and co-morbidities.

CALLS ON THE SYMPOSIUM

The authors together with the IMHA urge the ILO/WHO to ensure that the international guidelines are revised to include valid tests for prediabetes/type 2 diabetes in every health examination and install routine health statistical data (no GDPR problems) from the medical examinations for improvement of research.

Table 1. Results of the clinical trial with A1c test compared to urine dipstick test (n = 306) (*)

	HbA1c	Urine dipstick test			
		Negative	Positive	Total	
Normal	≤ 5.7% (39 mmol/mol)	139	0	139	45.7%
Prediabetes	5.7–6.4% (39–47 mmol/mol)	124	0	124	40.8%
Diabetes	≥ 6.5% (48 mmol/mol)	41	2 (4.9%)	43	13.5%
Total		304	2 (0.7%)	306	100.0%

*Physicians Diagnostic Service Center, Manila by Dr. Mary Jennifer D. Mendoza, MD

Figure 1. Blood glucose check with glucometer (Creative Commons Attribution 3.0)

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Descriptive study of French seafarers screened for dyschromia in seafarers' health services from 2010 to 2023

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ABSTRACT

Introduction: Seafarers are required to undergo a medical fitness examination before entry to a maritime course, and then periodically thereafter. This includes tests of visual acuity and color perception. In France, color vision tests are carried out by doctors and nurses from the Health Services for Seafarers. The aim of our study is firstly to assess the number of seafarers with dyschromatopsia, and secondly to determine the impact on their professional careers.

Methods: We extracted, from the national database, demographic data such as age, and professional data such as job function and type of navigation for seafarers declared dyschromatic SPC 3 in period 2010–2023.

We also studied more precisely medical files of seafarers declared SPC 3 in the Atlantic coast.

Results: Between 2010 and 2023, a total of 576,136 seafarers were seen for medical check-ups at the seafarers' health service SHS nationwide. Of these, 872 were screened for SPC 3, i.e., 0.151%.

In terms of age groups, the majority of seafarers who underwent a medical examination were aged between 20 and 39, representing 46.10% of this population. Those over 39s represent 36.92% and those under 20s 16.97%.

The most common onboard assignments held by these SPC3 seafarers include multi-purpose positions (38.30%), deck (23.62%) and general service (21.22%). Other functions were less frequent, with outfitting services at 0.23%, machinery at 8.26% and electronic radio at 0.8%.

In terms of the type of navigation, 42.54% worked in merchant navy, 37.72% in fishing, 17.54% in shellfish farming and only 2.17% in yachting.

We also studied 12 medical files for most of them the diagnosis of dyschromatopsia changed their work life.

Conclusions: In conclusion, our study has revealed several important aspects concerning color vision deficiencies, their detection and their major impact on professional careers.

We need to improve information provided to students before they choose a maritime career, to trained lanterns' operators and renewing our lantern of Beyne.

Prediabetes-Remission by lifestyle-mediated coaching

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ABSTRACT

Introduction: Seafarers and fishers are at increased risk of prediabetes as part of metabolic syndrome. Studies have shown that prediabetes can be reversed to normoglycemia. Coaching support plays a key role in the remission process. The aims are to provide:

1. Prevalence studies of prediabetes/type 2 diabetes among seafarers and maritime students.
2. Coaching and lifestyle-based studies for prediabetes remission to normoglycemia in 16 weeks.
3. Educational courses for students, seafarers, and other stakeholders in the maritime industry.

Methods:

1. The A1c levels in random samples of seafarers from maritime clinics in Latvia and Manila were assessed (Table 1). The studies included seafarers regardless of their risk for metabolic syndrome.
2. The ongoing 16-week study focuses on helping maritime students and seafarers with prediabetes. This includes those with fasting blood glucose levels between 100–125 mg/dL or A1c levels of 5.7–6.4% (39–47 mmol/mol) (Table 2).The participants send in weekly reports about their progress. They report on physical activity, diet, weight loss, and blood sugar tests done at home, at the university, and on board.
3. The educational course on prediabetes and hypertension features readings, videos and Zoom meetings with coaches. The program is presented in a NIVA online course, May-June 2025 (Fig 1).

Results:

1. The prevalence of prediabetes is 18.8%, 36.4%, 49.2% in the ages of 20–29, 30–49 and 50+ years of seafarers respectively (Table 1).
2. We will analyze the clinical data and weekly questionnaires from participants. This will help us understand the effects of the prediabetes remission studies and suggest improvements.
3. Invitations for the NIVA online course in May-June 2025 have been sent out. The program is ready for training of the coaches, maritime students, seafarers and other stakeholders (Fig. 1).

Discussion: The coaching-based prediabetes remission is pioneering a new area of maritime health research. Due to the high rates of prediabetes, we see a strong need for these programs. We look forward to running large-scale prediabetes remission efforts after our pilot studies. However, the learning part of the program in the Niva course is available now for the educational courses.

Conclusions: The prevalence of prediabetes (18–49% among people aged 20–50 years) highlights the need for studies on prediabetes remission. Future trials using various methods and lengths of coaching, e.g. digital coaching.

With this new program for prediabetes remission, the relevance of prediabetes diagnosis is obvious.

Significant improvements on early diagnosis and prevention of prediabetes/type 2 diabetes using appropriate data and research are expected after the launch of the program.

Keywords: prediabetes, type 2 diabetes mellitus, glucometer, remission, coaching

ACKNOWLEDGEMENTS

To all colleagues, friends and the seafarer's welfare organizations who supported strengthening the prevention of chronic non-infective diseases, like prediabetes, diabetes mellitus, and co-morbidities.

Table 1. Prevalence of A1c in maritime medical clinics in Latvia and Manila (n = 405) (*) 2023–2024

A1c levels		Age groups						Total	
		20–29		30–49		50+			
Normal	< 5.7% (39 mmol/mol)	64	80.0%	101	52.0%	40	31.0%	205	51%
Pre-diabetes	5.7–6.4% (39–47 mmol/mol)	15	18.8%	71	36.0%	64	49.0%	150	37%
Diabetes	≥ 6.5% (48 mmol/mol)	1	1.3%	23	12.0%	26	20.0%	50	12%

*Random samples from all seafarers who visited health examinations, regardless of risk factors, like overweight.

Table 2. Selection criteria of participants in the prediabetes-remission studies: A1c, FBG or glucometer data (a)

Diagnostic markers	Prediabetes	Diabetes
A1c (Lab. blood test)	5.7%–6.4% (39–47 mmol/mol)	≥ 6.5% (48 mmol/mol)
Glucometer		
Fasting plasma glucose (FBG) level (8 h)	100–125 mg/dL (5.6–6.9 mmol/l) (4)	≥126 mg/dL (7.0 mmol/L)
Postprandial glucose levels (b)	140–199 mg/dL (7.8–11 mmol/L) (4)	≥ 200 mg/dL (11.1 mmol/L)

(a) To be repeated (b) ≥ 2 h after a meal

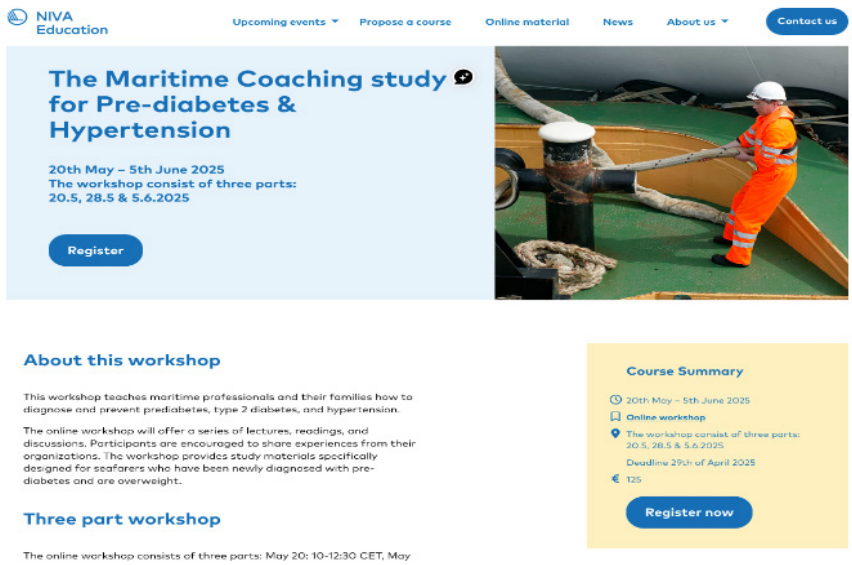

Figure 1. https://niva.org/course/the-maritime-coaching-study-for-pre-diabetes-hypertension/

Healthy Sailing Guideline on medical operations in expedition vessel: Aspects of maritime occupational medicine

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ABSTRACT

Introduction: Development of guidelines for specificities/needs of medical operations in expedition vessels is included in task 3.7 of the European project Healthy Sailing [1], a research/innovation action that aims to improve the quality of passenger shipping services, and make them, more resilient, competitive and efficient. A draft of this guideline with a special focus on their innovative points regarding crew medical assistance on board will be presented in order to receive feedback from all stakeholders.

Methods: The guideline draft has been developed on the basis of ILO/IMO Regulations [2], the Maritime Labor Convention 2006, the WHO Handbook for Ship Sanitation [3], the Shipsan Manual [4], and previous guidelines (American College of Emergency Physicians [5], Norwegian Maritime Medical Centre [6] and International Maritime Health Association documents [7]).

References for ashore hospitals have also been considered (Joint Commission [8] Accreditation Standards, best practices for clinical risk management and international medical facility guidelines [9, 10]), including relevant EU Legislation [11–13] and ISO regulations [14].

The development of draft guidelines proceeded in light of our practical experience gained in new cruise ships/ferries' medical facilities' authorization process [15, 16].

The draft layout includes: 1) Medical facilities activities; 2) Health ship services plan; 3) Health staff (consistency and professionals required, qualifications, training and skills; 4) Layout and physical design; 5) Equipment and laboratory testing capability; 6) Telemedical assistance; 7) Medicines; 8) Preparedness and readiness (contingency medical plan and reserve emergency medical facility); 9) Public health and infection control; 10) Quality System, Clinical Risk Management; 11) Customer satisfaction and complaints management; 12) Prevention and occupational medicine on crew; 13) Medico legal practice (according to the new US Legislation [17]; 14) Medical spa, aesthetic center, and dialysis); 15) Environmental management; 16) Administrative provisions (authorization process, periodic audits, grading).

The draft will be implemented subsequently with a six-month pilot testing on board, conducted in collaboration of some cruise ship companies.

Conclusions: The innovative aspects of this guideline compared to the previous are A) A global view of the ship medical facilities based on the three-pillar model, ensuring that they provide high-quality medical care, effective actions to prevent the spread of communicable diseases, and occupational/preventive medicine on crew. Specifically, the following are required. 1) Prevention of cardiovascular risk, alcohol/drugs abuse and psychiatric disorders; 2) Management of chronic conditions among

crew members (e.g., diabetes, anticoagulant therapies, psychological distress); 3) Coordination with PME crew examination, including the integration of the medicine chest; B) A health quality and clinical risk management system including crew satisfaction surveys and measures to increase accessibility to medical facilities, specific for crew; C) The prevision of an advanced second level of TMAS for ships without a doctor on board or sailing in remote areas lacking adequate shore-based medical facilities. D) A collaborative authorization process, extending from the design phase through shipyard to sea operations and post-launch audits that consider crew opinions/suggestions.
This guidelines draft will be open to continuous review, updates, and expansion with the contribution of all stakeholders. Readers are encouraged to provide feedback and to contribute material for further updates.

Keywords: ship medical facilities, Healthy Sailing, seafarers' preventive and occupational medicine

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Table 1. Guidelines contents

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- S1 INTRODUCTION AND METHODOLOGY
- S2 PROGRAMMATION: HEALTH SHIP SERVICE PLANNING
- S3 STAFF
  - CONSISTENCY
  - QUALIFICATIONS, TRAINING AND SKILLS
- S4 LAYOUT AND PHYSICAL DESIGN
  - SAFETY
  - LOCATION AND ACCESSIBILITY
  - ERGONOMICS
  - DECKS, SURFACES AND MATERIALS
  - GENERAL SERVICES (LIGHTING, POWER AND EMERGENCY POWER SYSTEM , HVAC (HEATING, VENTILATION , AIR CONDITIONING) , ICT AND COMMUNICATION SYSTEMS, WATER SYSTEMS
  - SPACE LAYOUT PLANNING (WAITING ROOM(S), IMPATIENT ACCOMODATION ROOM(S) , ISOLATION WARD(S), CONSULTING / EXAMINATION ROOM (S), OPERATIONAL TREATMENT/ STABILIZATION ROOM (TRAUMA AND RESUSCITATION BAY), INTENSIVE CARE UNIT ROOM, X RAYS AREA, MORGUE ,, TOILETS
- S5 EQUIPMENT
  - MEDICAL EQUIPMENT
  - LABORATORY TESTING CAPABILITY
- S6 TMAS (telemedical assistance)
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- S8 PUBLIC HEALTH
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- S18 CHECK LISTS
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Table 2. Requirements for the guidelines section “Medical Prevention and Occupational Medicine on Crew”

Any seaman should get medical care at sea as equivalent as possible to what she or he can expect ashore *Maritime Labour Convention's standard A 4.1*

C164 - Health Protection and Medical Care (Seafarers) Convention, 1987 (No. 164)
Convention concerning Health Protection and Medical Care for Seafarers (Entry into force: 11 Jan 1991)Adoption: Geneva, 74th ILC session (08 Oct 1987) - Status: Up-to-date instrument (Technical Convention).

ITEM	REQUIREMENT
S13 MPOMC	MEDICAL PREVENTION AND OCCUPATIONAL MEDICINE ON CREW

HEALTH ASSISTANCE FOR CREW MUST BE FREE WITHOUT APPLICATION OF ANY CHARGE

MEDICAL SERVICES ARE TIME ACCESSIBLE FOR CREW : evidence of organizational document granting for crew :
A) in case of acute conditions possibility to leave work immediately to access medical facilities
B) in case of non acute conditions or follow up compatibility medical facilities opening times with crew free time from work shift or possibility for crew to have permission to access medical facility during work shift

Dedicated consultation for follow up of crew with chronic pathologies (eg Diabetes hyperthension , HIV infection) NEW

PREVENTIVE OCCUPATIONAL MEDICINE :PRESENCE OF PLANS TO PROMOTE ONBOARD THE PREVENTION AMONG CREW OF
A) CARDIOVASCULAR RISKS
C) ALCOHOL ABUSE AND DRUG USE
D) SEXUAL TRANSMITTED INFECTION
NEW

PRESENCE OF SPECIFIC PROGRAM TO SUPPORT CREW MENTAL HEALTH AND PREVENT PHYSICHIATRIC DISORDERS including phschiatric y and/or Psycological counselling on line if deemed necessary by ship doctor or company occupational doctor NEW

PROCEDURE OF COMMUNICATION FROM OCCUPATIONAL MEDICINE COMPANY SERVICE ABOUT CREW'S SPECIFIC
A) FOLLOW UP CLINICAL ,LABORATORY AND IMAGING)
b)REQUIRED MEDICAL TREATMENT ONBOARD
c) LIMITATIONS GIVEN ON STCVW REG I/9 Fitness Certificate in particular " fit only for ship with doctor onboard"

IN ADDITION TO FLAG REQUIREMENT, SHIP'S MEDICINE CHEST ADEQUATE TO CREW PATHOLOGIES (EG Asthma medications , HRTT for HIV, Antidiabetic drugs;) NEW

VACCINATION SERVICE onboard FOR CREW
A) according to Flag State law and OCCUPATIONAL MEDICINE COMPANY PROGRAM (mandatory presence of tetanus / tetanus dyptheria vaccine, antitetanous immunoglobulin)
B) according to Guidelines for vaccination of passengers/crew in large passenger ships t372 healthy sailing
C) C) vaccine for seasonal influenza and Covid 19
D) vaccines for medical staff (hepatitis b , chickenpox , measles)

CREW CHECK AT EMBARKATION FOR PRESENCE OF SYMTOMS AS GROUNDS FOR SUSPECTING THE EXISTENCE OF A DISEASE OF AN INFECTIOUS NATURE NEW

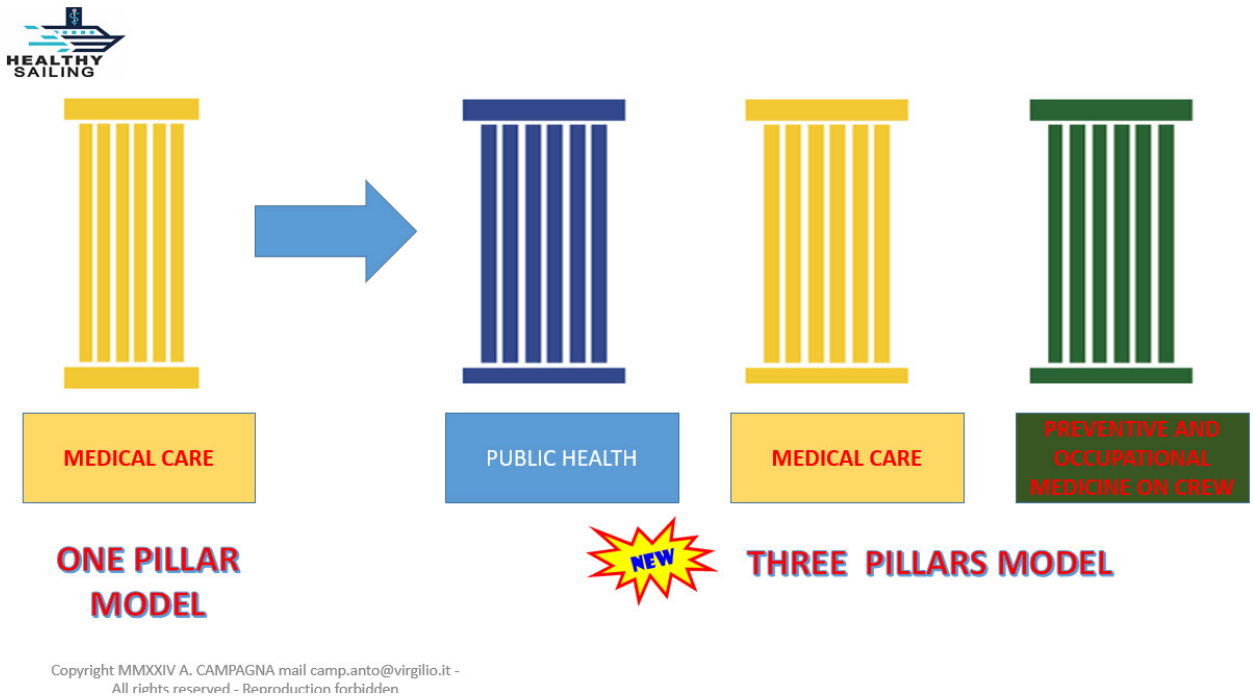

Figure 1. The Ship Medical Facilities "Three Pillars Model"

Int Marit Health 2025; 76 (suppl. 1): 1–101

Trends in the medical repatriation of Filipino seafarers: A ten-year study of a Philippine maritime shipping company

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ABSTRACT

Introduction: Seafarers, confronted with unique health challenges, occasionally necessitate medical repatriation. This study examines the trends in medical repatriation cases among Filipino seafarers employed by a maritime shipping company over a 10-year period from 2013 to 2022.

Materials and methods: Medical records of seafarers from a shipping company were reviewed, obtaining causes for and dates of medical repatriation. International Classification of Diseases (ICD-11) was utilized to classify repatriation cases. Proportion of repatriation cases was calculated and their annual trends were analyzed.

Results: Our findings reveal that the majority of repatriation cases are attributed to injury/trauma (19.91%), musculoskeletal (18.40%), gastrointestinal (16.56%), cardiovascular (8.77%), infectious (6.82%), and genitourinary conditions (5.30%). Significantly, the study identifies a declining trend in the proportion of cardiovascular, gastrointestinal, and genitourinary conditions in annual repatriation cases, particularly in ischemic heart conditions, cholelithiasis, cholecystitis, and urinary calculus.

Conclusions: These results emphasize the critical need for multisectoral collaboration to enhance seafarers' health and well-being. Prioritizing comprehensive care programs, ensuring safe working conditions, and exploring holistic healthcare initiatives are essential steps to enhance seafarers' occupational health.

Keywords: medical repatriation rates, Filipino seafarers, maritime industry, holistic care program, occupational health

The impact of seafarer medical fitness exams on medical disembarkations: A retrospective study of cruise ship crew

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ABSTRACT

The Maritime Labor Convention (MLC), which was established by the International Labor Organization (ILO), requires that all seafarers undergo a seafarer medical examination at least once every 2 years to ensure they are fit for routine and safe seafaring duties. These examinations usually include a review of medical history, a physical examination, and a urinalysis, although there is a variation depending on the issuing flag state. Seafarer fitness decisions are determined by the approved seafarer medical examiner, based on the MLC medical guidelines.

This retrospective study examines the impact of the seafarer medical fitness exam on medical disembarkation of crew members working on cruise ships. We reviewed 7,556 cases of seafarers who were medically disembarked between 2023 and 2024 from cruise ships. Our study aims to evaluate the MLC guidelines and determine what conditions are commonly not identified in the seafarer medical examination. These include cardiovascular risk factors (such as hypertension, diabetes and obesity), mental health conditions, other chronic health conditions, and certain infections. Our findings highlight potential gaps in the seafarer examination process and areas that seafarer medical examiners should focus on. We also offer recommendations for enhancing the seafarer medical examination process, including additional testing, better training for examiners, and possible updates to the MLC guidelines.

Keywords: maritime health, chronic diseases, seafarer

Int Marit Health 2025; 76 (suppl. 1): 1–101

Enhancing seafarer long-term health: Crew wellness programs

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ABSTRACT

Statutory Seafarer health exams conducted under IMO/ILO regulations are designed to assess the occupational fitness status of crew for their specific role on board. Employers and crew benefit from protecting long-term health as illness results in loss of earnings, career impact and avoidable deaths due to preventable diseases. The Carnival Corporation is shifting from a mostly reactive care approach towards a proactive care model to improve health outcomes. The integrated shipboard crew Wellness Program is an opt-in program designed to identify and treat chronic conditions such as diabetes, hypertension, hyperlipidemia and other health issues. Crew members are managed according to the latest medical guidelines and provided personalized care plans to improve their long-term health. Officers are also offered comprehensive executive health exams every 2 years at the Center for Simulator Maritime Training (CSMART) in Almere, Netherlands. This program includes physical exams, laboratory analysis, cardiovascular risk assessments and early cancer detection. By investing in the health of the crew we aim for a healthier and resilient workforce, ultimately improving career longevity, productivity, operational efficiencies and safety on board vessels.

Keywords: maritime health, chronic diseases, seafarer, offshore

State-of-the-art, challenges, and opportunities of maritime telemedical assistance

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ABSTRACT

Introduction: The provision of maritime telemedical care is a complex and fragmented field. Traditionally, maritime telemedicine has been provided by the state or by state-sponsored non-profit providers. However, in recent times, private sector providers have entered the field. These rapid changes and major technological advancements have raised challenges of inter-professional communication, expertise sharing, professional jurisdictions, and technological limitations. Through a scoping project, we aimed to understand the state of play in maritime telemedicine: (a) The main providers of maritime telemedicine (b) The main service models (c) The technology used by service providers, such as telephone, email and other emerging advanced technologies (d) How legal, insurance and ethical issues are being addressed (e) Challenges and issues encountered and pressing challenges faced by the industry and its actors.

Methods: Data were collected through a scoping review of maritime telemedicine literature (Table 1) as well as interviews with 16 participants from 10 organizations (public and private TMAS providers, P&I clubs, international bodies, and seafarers). The review of the literature provided a strong overview of actors involved in provision of telemedical care, particularly from a public TMAS perspective. Our interviewees suggested comparable caseloads between public and private TMAS, between 3,000–7,000 cases per year. Public TMAS services tend to be government funded or charity run organizations, private TMAS services tend to be subscription based, based on the number of ships under care. Service Provision and models of care: There is variation in engagement between TMAS provision, with some services providing emergency care, while other providing routine primary care, and others, preventative care for seafarers on board. Physical, physiological and more recently mental health services are being provided. Reactive versus proactive engagement from health care providers was a point of difference, private TMAS services interviewed, stated that they proactively reached out to vessels after an initial call to follow up on patient progress, which suggests a different approach than TMAS centers asking the vessel to initiate communication for further assistance. Interviewees suggested there were also noticeable differences within the expertise requirements and rationale for selection of the medical team. Technology use: Participants differed in their need to establish a direct contact with patients, with some suggesting direct contact was paramount, while for other mediated care worked well unless there was a need for patient privacy. Interest in Telemedicine: There is an increasing expectation that seafarers will anticipate better healthcare provision during their sea service contracts and though interest in maritime telemedicine is waning post-COVID, there is growing attention from ship owner, managers and P&I clubs in remote health services.

Discussion and Conclusion: Our initial findings have allowed us to start mapping the state of play in maritime telemedicine, yet there are questions that remain around the perspectives of the seafarers, the processes of care provision and what the different models mean in terms of the provision of care possible. As such, we aim to conduct a further, more robust investigation into these aspects.

Shipboard point of care ultrasound: A case study and reflection on the role of artificial intelligence

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ABSTRACT

Maritime medical officers working in isolated and extreme environments must be prepared to problem-solve in acute situations where they have limited relevant specialty expertise. Similarly, shipboard practitioners are required to make clinical care decisions without access to advanced imaging, diagnostics, or laboratory facilities. The advent of Point of Care Ultrasound (PoCUS) has offered cost-effective access to diagnostics for vessels and crews of various sizes and in isolation. However, merely having the equipment does not guarantee effective image capture, analysis, and interpretation. Autonomous aides, such as artificial intelligence (AI), have been postulated as effective tools to help practitioners provide higher quality care in resource- or experience-limited settings. AI has been proposed as a useful supplement to clinical expertise in the interpretation of medical imaging; however, in current medical practice, AI does not supplant a qualified clinician, and the tasks shared between human practitioners and such automation require further delineation. It is still best practice to default to human specialists or transfer to higher levels of care when the clinical picture is uncertain. However, during a mid-ocean voyage, this default to terrestrial resources may not be possible as real-time image analysis and interpretation could be prohibitively slow in an emergency response. This concept can similarly be applied to austere communities globally without reliable connectivity. In these communication-limited scenarios, as postulated by previous research, AI may improve the ability of practitioners to respond to medical situations that fall outside their expertise. In such a proposed teaming paradigm, AI may act as an adjunct to medical practice rather than an independently trustworthy source of diagnostic information. By analyzing a case study of an ill crewmember with lower abdominal pain who is evaluated on a 300-foot, Icebreaker-class research vessel in Antarctic waters without PoCUS or advanced imaging capabilities, we explore the potential role of, and limitations in, AI in remote and extreme environment medicine. By evaluating the outcome of this case and reflecting on concurrent research in AI-guided Point of Care Ultrasound we will expand on the relevant issues highlighted by the scenario and recommend areas of further research in remote medical training and human-automation teaming.

AMOSUP Seamen's Hospital Manila 8 year Telehealth Experience

Alfonso Syoeei R. Yoshida, Pile George, Ortigas Alejandro, Oca Conrado

AMOSUP-Seamen's Hospital Manila

ABSTRACT

Seafarers are a distinctive group of the population working on board seagoing vessels for a set length of time during their employment contract. The job function of the seafarer is diverse ranging from being a mate, engineer, bosun, mess man and cook. They are in constant physical exposure to factors such as heat, vibration, noise, electromagnetic field, various chemicals in their working environment as well as affected by exposure to different endemic diseases in the ports they dock. Access to medical services is affected by their distance from land during their voyage. Telehealth and Telemedicine Eduardo P. Reyes involves the availability of information technology in actual curative aspect of health management with a distant patient. Telemedicine has played an increasing role in improving access to and complementing crucial and timely delivery of health care. Dermatology, psychotherapy, surgery, radiology, internal medicine are among the fields that have contributed to the telehealth system. Maritime medicine is one field that has greatly benefited from the telemedicine system in providing crucial and timely medical care to hospital off-site patients. AMOSUP-Seamen's Hospital Manila together with the Japan Seafarer's Union launched its Telehealth Service called AMOSUP-MEDKONEK in July 2016, with its main objective to provide assistance through telemedicine to aid and provide expert advice to onboard medical care provider who is attending to the health need of the crew. The facility is operated at AMOSUP-Seamen's Hospital Manila, manned 4 computer staff and direct telephone line that will respond to email or satellite phone calls and supervised by a Family Medicine Resident that will respond directly to medical consults or refer medical, surgical and mental issues to expert consultant staff. To date the service has provided 1,645 medical consults, helping prevent life-treating conditions and complications over the 8-year period.

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Evaluation of tuberculosis management: Policy analysis, early detection, and treatment among Indonesian seafarers

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ABSTRACT

Introduction: Tuberculosis (TB) remains one of the most dangerous infectious diseases threatening global health, especially for sailors who are at significant risk because of their demanding working conditions and constant mobility. Seafarers often work on ships that are remote and have little to no medical care, which makes early diagnosis and treatment of TB almost impossible. In Indonesia, the burden of TB among seafarers is particularly high, and the number of deaths in recent years is alarming. Data suggests that almost 12% of seafarers working on Indonesian ships are diagnosed with TB, and the death rates continue to rise. This study seeks to examine the existing control measures implemented among seafarers regarding tuberculosis, with special emphasis on early diagnosis, treatment, and preventive measures both on board and in ports.

Methods: The methods used for this research are descriptive, involving the use of secondary data from health report files, interviews with medical practitioners specializing in maritime medicine, and document analysis of relevant literature. The data gathered covers the policies concerning health, medical equipment available on board, and treatment procedures performed at the ports.

Discussion: The insights gathered from the study show that the primary barriers to managing tuberculosis on vessels remain the presence of inadequate medical care on ships and fragmented treatment, regardless of attempts to create awareness among seafarers. Additionally, the sailors' mobility during voyages is an added complication because it hinders their access to a consistent treatment. The graph illustrates the trend of TB cases among Indonesian seafarers in the past five years, showing a marked increase, while efforts to improve healthcare facilities have resulted in slight decreases in the mortality rate, further indicating the problem. From the study, we can analyse that there is a gap in policy frameworks aimed at addressing seafarers' health burdens, emphasizing the need for change considering their high level of movement. To lower the incidence and mortality rates, it is imperative to improve the medical care on ships and at ports, train the available personnel to specialize in TB care, and provide consistent treatment along with regular health assessments.

Conclusions: TB among mariners must be dealt with in a more holistic and integrated manner, focusing on increasing access to treatment and medical facilities. Coordination between the government, shipping companies, and health workers is key to creating an effective maritime health system that can address the TB issue. Strengthening maritime health policies and raising awareness among mariners are key steps in tackling TB in the maritime industry.

Keywords: tuberculosis, seafarer, early detection, prevention, health policy

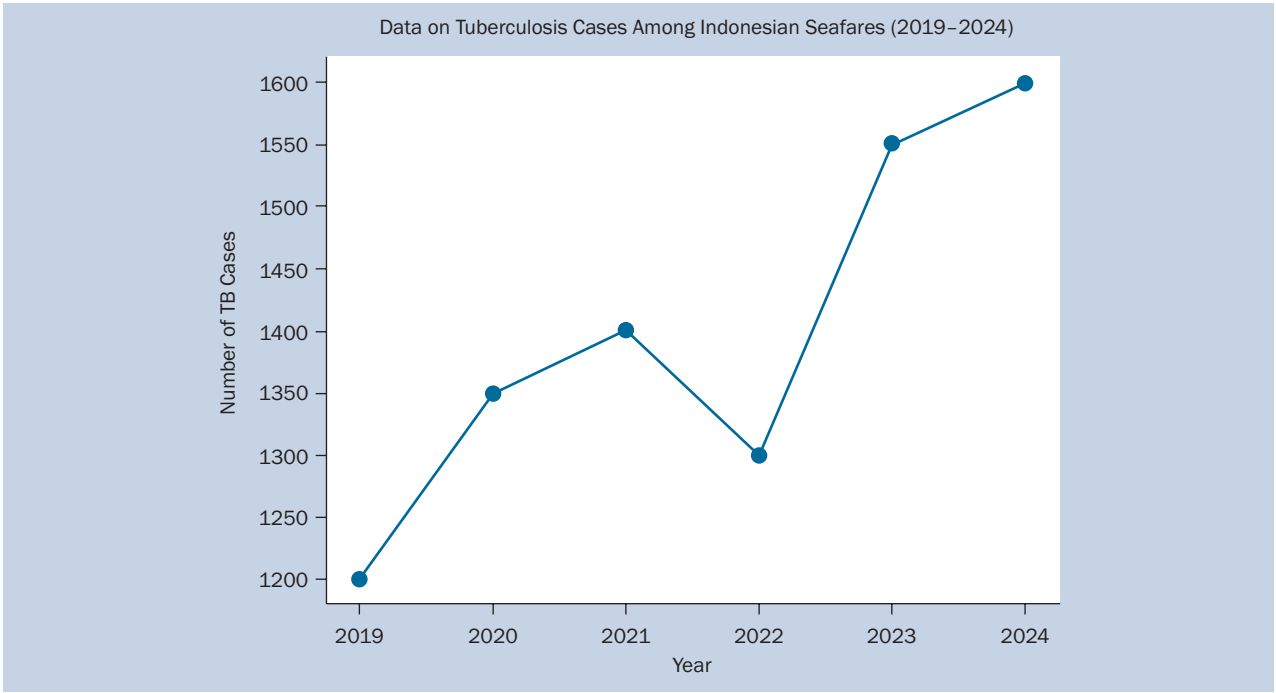

Figure 1. Data on Tuberculosis Among Indonesian Seafarers (2019–2024)

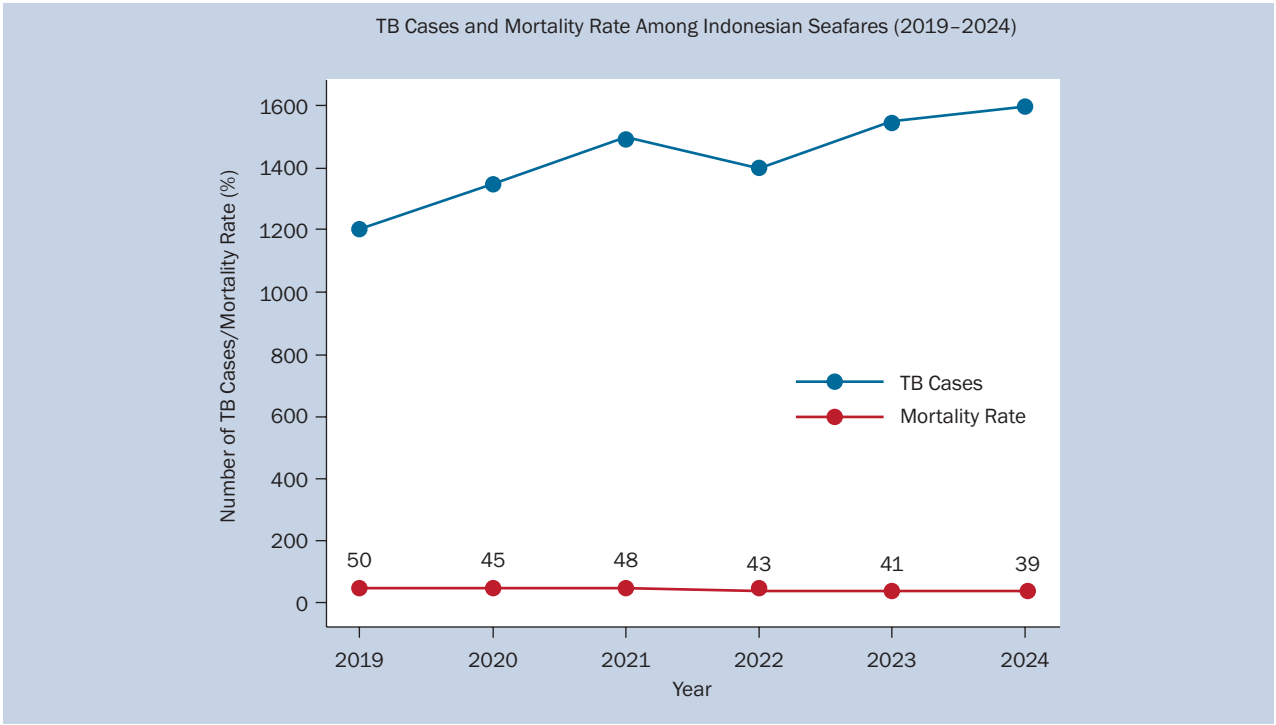

Figure 2. TB Cases and Mortality Among Indonesian Seafarers (2019–2024)

International Maritime Health Journal as a tool to support the health care of people working at sea

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ABSTRACT

Introduction: The current situation of International Maritime Health Journal is good due to the recognition by Web of Science and maintaining the impact factor score. For decades IMH has been a platform for the exchange of information in the field of maritime health, hyperbaric, tropical and travel medicine as well as psychological problems and challenges.

Method: Open access in the electronic version of the journal allows IMH to reach the audience all over the world. The newly included Magazine section is a platform for the exchange of knowledge and experience of people from the maritime industry.

Results: International Maritime Health Journal represents three important areas of benefits for the maritime well-being. First of all, the Journal is a space for sharing scientific knowledge and professional development. It is a form of preventive activity and actions in the area of health promotion. Secondly it is a source of knowledge and tips for specialists in the field of maritime health care derived from articles concerning case studies, new diagnostic tools, use of AI, new threats and screening tools etc. Finally IMH Journal with the Magazine section is source of information for people from the maritime industry, such as: seafarers, offshore workers, shipowners, onshore service and adjacent fields, societies and many more. Such audience may find information and instructions about possibilities of seeking support, training, workshops psychoeducation, diagnosis and therapy.

Conclusions: Thanks to obtaining the impact factor, we observe an increased number of submitted articles based on the increase in the prestige of the journal. The advantage is that the journal has a good position on the scientific market, in the niche area of marine medicine. We still see a room for development and growth, especially in the area of review standards and the search for new members of the editorial team and reviewers.

Keywords: maritime health, scientific journal, seafarers, psychological well-being

INFORMATION FOR AUTHORS

The International Maritime Health will publish original papers on medical and health problems of seafarers, fishermen, divers, dockers, shipyard workers and other maritime workers, as well as papers on tropical medicine, travel medicine, epidemiology, and other related topics.

Typical length of such a paper would be 2000–4000 words, not including tables, figures and references. Its construction should follow the usual pattern: abstract (structured abstract of no more than 300 words); key words; introduction; participants; materials; methods; results; discussion; and conclusions/key messages.

Case Reports will also be accepted, particularly of work-related diseases and accidents among maritime workers.

All papers will be peer-reviewed. The comments made by the reviewers will be sent to authors, and their criticism and proposed amendments should be taken into consideration by authors submitting revised texts.

Review articles on specific topics, exposures, preventive interventions, and on the national maritime health services will also be considered for publication. Their length will be from 1000 to 4000 words, including tables, figures and references.

Letters to the Editor discussing recently published articles, reporting research projects or informing about workshops will be accepted; they should not exceed 500 words of text and 5 references.

There also will be the section Chronicle, in which brief reports will be published on the international symposia and national meetings on maritime medicine and health, on tropical parasitology and epidemiology, on travel medicine and other subjects related to the health of seafarers and other maritime workers. Information will also be given on training activities in this field, and on international collaborative projects related to the above subjects.

All articles should be submitted to IMH electronically online at www.intmarhealth.pl where detailed instruction regarding submission process will be provided.

Only English texts will be accepted.

Manuscripts should be typed in double line spacing on numbered pages and conform to the usual requirements (Ref.: International Committee on Medical Journals Editors. Uniform Requirements for Manuscripts Submitted to Biomedical Journals, JAMA, 1997; 277: 927–934).

Only manuscripts that have not been published previously, and are not under consideration by another publisher, will be accepted.

Full texts of oral presentations at meetings (with abstracts printed in the conference materials) can be considered.

All authors must give written consent to publication of the text.

Manuscripts should present original material, the writing should be clear, study methods appropriate, the conclusions should be reasonable and supported by the data. Abbreviations, if used, should be explained.

Drugs should be referred to by their approved names (not by trade names). Scientific measurements should be given in SI units, except for blood pressure, which should be expressed in mm Hg.

Authors should give their names, addresses, and affiliations for the time they did the work. A current address of one author should be indicated for correspondence, including telephone and fax numbers, and e-mail address.

All financial and material support for the reported research and work should be identified in the manuscript.

REFERENCES

References should be numbered in the order in which they appear in the text. At the end of the article the full list of references should give the names and initials of all authors (unless there are more than six authors, when only the first three should be given followed by: et al.).

The authors' names are followed by the title of the article; the title of the journal abbreviated according to Medline; the year of publication, the volume number; and the first and last page numbers. **Please note:** References you should include DOI numbers of the cited papers (if applicable) – it will enable the references to be linked out directly to proper websites. (e.g. Redon J, Cifkova R, Laurent S et al. Mechanisms of hypertension in the cardiometabolic syndrome. J Hypertens. 2009; 27(3): 441–451, doi: 10.1097/HJH.0b013e32831e13e5.).

Reference to books should give the title, names of authors or of editors, publisher, place of publication, and the year.

Information from yet unpublished articles, papers reported at meetings, or personal communications should be cited only in the text, not in References.

For full information for authors refer to the web page: www.intmarhealth.pl.

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