

PROMETHEAS Project - Mental Health Data Research Hub for Seafarers

Reza Ziarati ^a (Professor Dr)
Mariusz Dramski ^b
Heikki Koivisto ^c (Captain, MM)
Tomaž Gregorič ^d
Germán de Melo Rodríguez ^e (Professor)
Aris Chronopoulos ^f

^a University Centre Garden City, Kenilworth, United Kingdom

^b Maritime University of Szczecin, Szczecin, Poland

^c Satakunta University of Applied Sciences, Pori, Finland

^d Spinaker d. o.o., Slovenia

^e Technical University of Catalunya, Barcelona, Spain

^f IDEC SA, Piraeus, Greece

Abstract

Some 90% of the world visible trade is transported by sea. It is therefore of prime importance that the mental wellbeing of all seafarers onboard ocean-going vessels is seriously taken into consideration. Mental health is a state of wellbeing in which the individual realises his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community. Research as C4FF has shown that many seafarers endure a range of stressful situation, and this is often not seriously studied.

This paper report on the outcome of an investigation carried by C4FF and its European partners into the mental health problems of seafarers focusing on identification of the problems which create or lead to mental health issues with a view to find feasible solutions hence making life on board more pleasant. There have been several studies by C4FF reviewing seafarers' difficult life on-board ocean-going vessels and looking at factors such as sleeping patterns which is known to impact on fatigue and stress in seafarers. Fatigue alone has led to many accidents and serious incidents at sea. Bullying is also a subject of interest in PROMETHEAS project but the work on bullying is planned for another paper which will explore as why it is important to study the causes and effects of bullying? The paper offers a number of practical solutions to achieve a high level of mental hygiene and have some understanding the affects of the medicinal remedies.

The main purpose of this paper is to gather sufficient data and establish a data hub for mental wellbeing of seafarers so that sufficient information is to gather for legislators helping to bring about new rules and regulations to improve mental health as sea. The intention also is to use the findings to develop an e-course in Mental Health and Wellbeing for seafarers with a special section for captains and shipping companies.

Keywords: mental health of seafarers; bullying; wellbeing of seafarers.

Introduction

There are a number of key aspects that affect seafarers when out at sea. These aspects that affect seafarers include; productivity levels, physical endurance, and cognitive ability. There are a number of factors that influence the above, an example of these are; changes in the environment, the specific nature of one's occupation, the desire for one's level of productivity, increased levels of fatigue from long voyages, etc. C4FF previously worked on another study, which was titled "Project Horizon - Stress at Sea". Project Horizon was a major multi- partnership European research study that brought together 11 academic institutions and shipping industry organisations. All organisations, institutions and beneficiaries shared the collective aim of delivering empirical data, to provide a better understanding of watch keeping patterns within the Maritime workforce. The broad spread of the project partners ensured expert objectivity of the project and its results, as well as widening routes for dissemination and exploitation of the findings. Project Horizon, similarly to Prometheus, looked at issues surrounding fatigue in various realistic scenarios. The study was able to capture empirical data on the cognitive performance of watch keepers and assess the impact of fatigue on decision- making performance. In response to the research findings, the Project Horizon partners have developed a fatigue management toolkit for the industry. This toolkit seeks to provide guidance to owners, operators, maritime regulators and seafarers to assist them in organising work patterns at sea in the safest and healthiest way possible. Fatigue is generally understood to be a state of acute mental and/or physical tiredness, in which there is a progressive decline in performance and alertness. Fatigue is often considered to be a generic term, of which 'sleepiness' is one of the major sub-components. Throughout the PROMETHEAS project, we shall explore further the causes and effects of mental illness in seafarers and how to overcome this issue.

The project began with a literature review focusing on the correlation between Maritime workers and mental health realising that seafaring profession is a highly hierarchical micro- societal. What is it specifically, about working at the sea that causes such devastating emotional effects on these loyal and dedicated service individuals? We shall start by looking at the Canadian model of occupational performance (COPM).

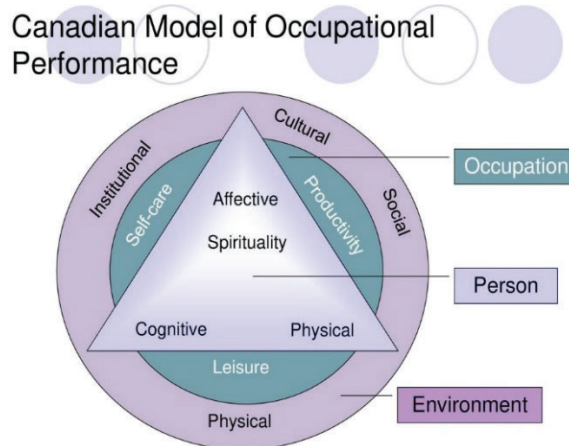


Figure 1. Canadian Model of Occupational Performance

The key aspect of COPM demonstrates how Occupation, Person and Environment relate to one another. So, in effect the environment that we are put into, or have voluntarily chosen to reference ourselves into, will have an effect upon what we do (Occupation) and can influence who we are (person). Take the example of Singh et al’s (2016) research study into the effect that the Environment and occupation had on Children in India. The study showed that “a child's intelligence quotient (IQ) is determined by both genetic and environmental factors that start from the prenatal period itself”. In the study, the researchers recruited “1065 schoolchildren between the age of 12 and 16 years from 2 government and 13 private schools in 5 towns, 6 cities, and 2 villages across India” (Singh et al, 2016). The results from the study were staggering, as they showed that “environmental factors such as; place of residence, physical activity, family income, parental education, and occupation of the father had an impact on the IQ of the children” (Singh et al, 2016). Children living in cities, having physical activity of more than 5 hours weekly, whose parents had a postgraduate or graduate level of education, whose father held a professional job and lastly, those with a higher family income were more likely to give the child a high IQ over children that did not share these environmental and social factors (Singh et al, 2016). This example from Singh et al (2016) proves the theory of the Canadian model of Occupational Performance. In relation to our own research project, the effect of a seafarers’ environment on his occupation and as a result, himself, could be relatively significant. We will work through this study to discover more in relation to mental health and its connection to the Maritime industry, in order to accurately research, any missing gaps in the pre-existing studies. There are many assumptions of the Maritime industry, including sex, race, social-economic status of workers and behaviour. An assumption of the Maritime industry is that it is largely male dominated, this assumption would be correct according to Kitada (2013). A study by Sailors’ Society and Yale University (2018) reported of 26% of seafarers showing signs of depression and half of them not asking for help

(SAFETY4SEA, 2018). Branney and White (2008) argue that “excess female depression could, for example, be an artefact of how depression is recognised and treated or of how men self-diagnose and seek help”. This statement theorises how arguably, men with mental health difficulties are less likely to seek help or be treated, due to how they categorise their emotion. There are many acclaimed social researchers who do an excellent job at explaining how life at sea can be difficult, challenging and even sometimes, unbearable. One of these is Social Scientist, Baygi et al (2018) who argued “Seafaring is a highly physically demanding profession in a risky environment.

Seafarers face tough working conditions when they are on board. Working far from home for several months can lead to some difficulties for their overall health”. Iverson (2012) reports on the findings from the International Maritime Health Association which states that “seafaring is one of the most physically demanding professions in one of the most dangerous work environments: the sea”. “Being far from home for a long period of time, long working hours, heavy workloads, accidents, maritime disasters, communicable diseases and pirate incidents are some of the main stressors, risks and challenges of seafarers on board ships that can cause some consequences for their physical and mental health” (Baygi et al, 2018). Therefore, one would argue that these findings from the Social Researchers (as mentioned above) highlight how mental illness or poor states of mental health can be a consistent issue in Maritime workers. In researching mental health and its effects on Maritime staff, we came across a blog written by Kelsey, a female seafarer, who works aboard cruise ships. She writes, “Who I am today is a direct result of my 18 months lived at sea and the sobering emotions I felt, like:

- The sadness of being so far from home and family.
- The isolation of living detached from the life on land.
- The fear of a rough night at sea spent sleepless amid pitching and rolling.
- The tension that mounts among roommates and the confinements of your cabin becoming unbearable.
- True cabin fever
- The loneliness felt as you stare out into an ocean with no visible end or beginning.
- The gravity in realising your true size, bobbing atop a world covered in blue. (Life of a Seafarer: The Original Traveler, 2020)

Research has shown that the occupation of a seafarer put the individual as one of the most “at-risk” categories for committing suicide, with perhaps the most obvious cause; drowning.

Szymanska et al (2006, in Iverson, 2012), has studied suicide trends among Polish seamen from 1969–1999. The researchers found that out of “324 total deaths there were 33 suicides – 10.2% of

seafarer deaths, which was significantly higher than the incidence of suicides among the male Polish population over 20 years of age” (Szymanska et al, 2006, in Iverson, 2012). In the past 40 years, the maritime industry has seen a steep decline in the level of suicides at work in this industry. Some might argue that the reasoning for this is the increase of aid and support for the maritime industry, for example; a reduction over time in long intercontinental voyages and changes of seafarers’ lifestyles (Roberts et al, 2010, in Andruškienė, Barsevičienė and Varoneckas, 2016). Andruškienė, Barsevičienė, and Varoneckas, (2016) conducted a study based around the mental health of maritime students and the relationship this held to sleep. The findings of the research study indicated “close relations among sleep quality, anxiety and depression, especially among third (fourth) year students and studying in the programmes, where practices were held on ships”. Henceforth, after all of the research we have gathered within the paper, one argues that there is a correlation between mental health and maritime workers. So far, we have largely looked at the relationship between occupation and fatigue, and how this might affect one’s overall health. Nevertheless, there are many more factors involved at play in terms of the overall influences that may affect one’s mental health. Some other examples of these influences, which we may briefly bypass throughout this study, are; social- isolation, drug or alcohol misuse, also previous struggles with dominance or management prior to taking on the role.

In terms of further guidelines which are more specific to seafarers, the International Seafarers Welfare and Assistance Network (ISWAN) Mental Health Guidelines 2016 provide really thorough and specific information about the risks, signs and symptoms of difficulties that can be experienced at sea. It also highlights what can increase the likelihood of these difficulties occurring and thankfully, what to do to improve these effects. These points can be used to cover some of the unit content that will be specific to seafarers. The other key information, more specific to seafarers, is derived from a bulletin from March 2018. The Maritime Safety Awareness Bulletin, Issue 7, March 2018 shares its knowledge of mental health, what it is, how it is related to seafarers, what the risk factors are and how best to combat difficulties. It provides take away messages and resources for further consideration.

PROMETHEAS Project

The project’s key aspects are described in its extended logo as shown below:

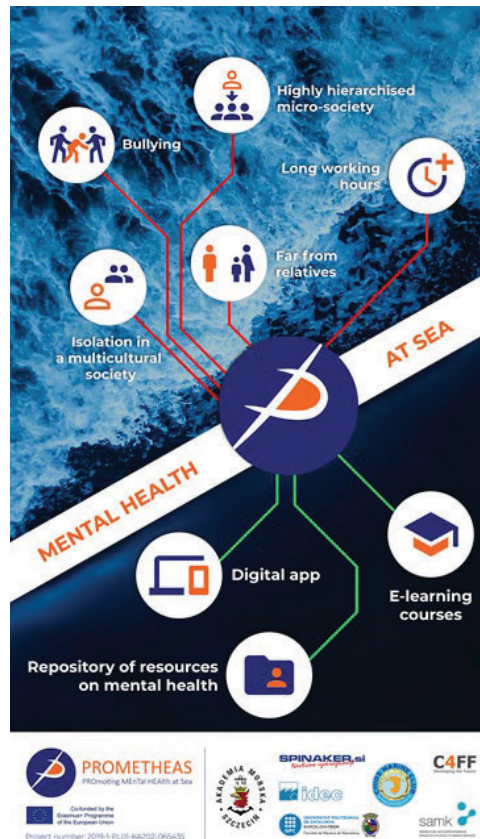


Figure 2. Key aspects of PROMETHEAS project

As shown in the figure above, seafarers work on a hierarchical macro society where crew members work long and often irregular hours in an isolated and multicultural environment where bullying and harassment can be a major issue.

The first part of PROMETHEAS research involved carrying out survey and a desk research to outline the main problems and solutions applied to the problems identified. The problems found and solutions prescribed are listed in Annex 1 of this paper. The next step was to find a methodology to cross-reference the identified problems and solutions found and present them as key factors including organisational and provide possible remedies for them and then through several quizzes ensure a greater understanding of the problems and solutions.

The ultimate aim of this research is to improve mental health as sea and seek ways to eradicate bullying and harassment. To this end, the findings from this project are used to develop an e-course in mental health and wellbeing for seafarers with special sections for shipping companies and Captains.

The earlier research by C4FF and its EU partners had clearly identified fatigue, poor organisation procedures and inadequate training as the three main contributory factors in mental health illnesses as well as in accidents at sea. It was on this basis that C4FF welcome the formation of Special Interest Group (SIG) for Mental Health and Wellbeing in the UK who have been supporting the

IMarEST conference. It is hoped that by forming a formidable consortium of key seafaring and health specialist organisations there will be opportunities of improving mental health in shipping industry through learning from each other and acting together particularly finding way to improve legislation concerning work pattern and self-improvement on board vessels. The key organisations to target are IMO and ILO.

Improving Mental Health

The preliminary stage was to use the findings from the literature search and prepare a list of problems and solutions. The following is an example of the format of the how problems were identified and numbered and solutions were found and listed (Ziarati, et al. 2021).

Table 1. Identified problems and solutions (International Maritime Health 2019; 70(2):82-87)

Identified Problems and Solutions	
<p>ID P_001 Title Boredom Description - Boredom is usually experienced when workers face a monotonous life along with frustration, according to the paper. This combination is often found among seafarers, because of the monotony of work onboard, routine deck-work or using machinery, being on watch, or doing maintenance tasks, especially at sea. Solutions: S_001, S_002, S_004, S_005, S_007-015 Related documents - D_001 Don't forget about seafarer's boredom</p>	<p>ID S_001 Title - Take time out Description - Taking up a hobby can help in order to relax and take the mind off negative thoughts – card games, puzzles, reading, table tennis are good examples. It is necessary to try doing it during the free time. Related documents: Information on Reading material, Internet resources, Yoga, Martial Arts, Music and so forth. Sample Document: By Dominique Jegaden, Myriam Menaheze, David Lucas, Brice Loddé, Jean- Dominique Dewitte - DOI: 10.5603/IMH.2019.0013 Pubmed: 31237666</p>

The intention is to develop depository of problems and by using intelligence means to cross-reference problems with a list of possible solution under a given category.

The next stage was to initiate a series of steps is to find key factors which improve Mental Health as shown below. The important consideration was to find the factors that put pressure on mental health and then find the main divided these into Organisational factors and how to mitigate them followed by other ways and means to counter mental health issues such as physical exercises, reflecting on situation, and so forth as outline below:

1. Factors putting pressure on mental health at sea.
2. Organisational factors and how to mitigate them.

3. Positive attitude and tips to think positively.
4. Physical exercise and its impact.
5. Reflection on the situation.
6. Distinction between facts and statements.
7. How to think constructively.
8. Human relations.
9. Group Dynamics.

Table 2. Factors putting pressure on mental health Indicators of poor mental health

Physical	Psychological	Behavioural
Fatigue	Anxiety or distress	Increased smoking and drinking
Indigestions or upset stomach	Tearfulness	Using recreational drugs
Headaches	Feeling low	Withdrawal
Appetite and weight changes	Mood changes	Resigned attitude
Joint and back pain	Indecision	Irritability, anger or aggression
Changes in sleep patterns	Loss of motivation	Over-excitement or euphoria
Visible tension or trembling	Loss of humour	Restlessness
Nervous trembling speech	Increased sensitivity	Apparent over-reaction to problems
Chest or throat pain	Distraction or confusion	Working far longer hours
Sweating	Difficulty relaxing	Intense or obsessive activity
Constantly feeling cold	Lapses in memory	Repetitive speech or activity
	Illogical or irrational thought processes	Impaired or inconsistent performance
	Difficulty taking information in	Uncharacteristic errors
	Increased suicidal thoughts	Increased sickness absence
	Responding to experiences, sensations or people not observable by others	Uncharacteristic problems with colleagues
		Risk-taking
		Disruptive or anti-social behaviour
		Lateness, leaving early or extended lunches

To understand the nine steps outline above there are a number of quizzes to fully understand the significance of each step and what outcome is expected at each stage.

Several quizzes have been prepared to help understand how to avoid mental stress and means of mitigating mental stress when it occurs. The quizzes also help learning process and a way to do some self-assessment. An example is given below:

Table 3. Factors putting pressure on mental health at sea: Example Quiz

Physical	Psychological	Behavioural
Lateness, leaving early or	Uncharacteristic problems with	Illogical or irrational thought

extended lunches Resigned attitude	colleagues Mood changes	processes Visible tension or trembling
Changes in sleep patterns Fatigue	Loss of motivation Feeling low	Distraction or confusion Appetite and weight changes
Withdrawal	Sweating	Irritability, anger or aggression

The following at Table 4 list are indicators of poor mental health, group them under Physical, Psychological and Behavioural categories

Table 4. A Sample Quiz: Answers:

Physical	Psychological	Behavioural
Visible tension or trembling	Illogical or irrational thought processes	Lateness, leaving early or extended lunches
Changes in sleep patterns	Mood changes	Uncharacteristic problems with colleagues
Fatigue	Loss of motivation	Withdrawal
Appetite and weight changes	Distraction or confusion	Irritability, anger or aggression
Sweating	Feeling low	Resigned attitude

Conclusions

PROMoting MEnTal HEAlth at Sea (PROMETHEAS) is an Erasmus+ KA2 Strategic partnership for VET, development of innovation project. The central aim of this project is to develop a training course and learning resources for seafarers and maritime workers concerning the preservation and improvement of their mental health. It focuses on the various issues that derive from mental health problems and provides learners with necessary information and consultation on how to deal with these problems. PROMETHEAS is a sector specific project. It is based on the matter of fact, supported by hard evidence, that mental health problems constitute one of the main risks of seafarer professions, yet neither initial nautical studies nor VET have dealt with this problem up to now. This has as a result that seafarers lack the knowledge and skills that would have helped them mitigate this risk. The project aims at developing these skills through joining deep knowledge and expertise on the maritime sector of 7 institutions coming from 6 European countries. More specifically, PROMETHEAS will produce three core intellectual outputs: 1. Repository of resources on mental health for maritime staff; 2. E-learning training course for captains & seafarers; 3. Digital app- self evaluation.

References

1. Andruėkienė, J., Barsevičienė, Š. and Varoneckas, G., (2016) Poor Sleep, Anxiety,

Depression and Other Occupational Health Risks in Seafaring Population, *TransNav; the International Journal on Marine Navigation and Safety of Sea Transportation*, Vol. 10, Issue 1, pp.19-26.

2. Baygi, F., Jensen, O., Farshad, A., Shidfar, F. and Mohammadi-Nasrabadi, F., (2018) A qualitative study on physical health threatening factors of Iranian seafarers working on ocean going tankers. *International Maritime Health*, [online] Vol. 69 Issue 3, pp.192-200.

3. Branney, P. and White, A. (2008) Big boys don't cry: depression and men. *Advances in Psychiatric Treatment*, Vol. 14, Issue 4, pp.256-262

4. Kitada, M., (2013) Code of behavior at sea: women seafarers' shipboard identity management, *WMU*

5. *Journal of Maritime Affairs*, [online] Vol. 12, Issue 2, pp.213-227. Available at: <https://link.springer.com/article/10.1007%2Fs13437-013-0044-7> [Accessed 24 March 2020].

6. SAFETY4SEA. (2018) 26% of Seafarers Show Signs Of Depression, Says New Report - SAFETY4SEA [online] Available at: <https://safety4sea.com/26-of-seafarers-show-signs-of-depression-says-new-report/> [Accessed 23 March 2020].

7. Singh, Y., Makharia, A., Nagarajan, A., Mishra, A., Peddisetty, S. and Chahal, D., (2016) Effect of environmental factors on intelligence quotient of children. *Industrial Psychiatry Journal*, [online] Vol. 25, Issue 2, pp.189. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5479093/> [Accessed 31 August 2021].

8. Ziarati and Ziarati. (2021), Stress at Sea and Tiredness - Learning from the Project Horizon - Stress at Sea MariFuture, https://www.marifuture.org/Publications/Articles/Stress_at_Sea_and_Tiredness_Article.pdf.

9. Ziarati et al. (2021), The Suggested Bullying Content for the Prometheus E-learning, Marifuture, https://www.marifuture.org/Reports/Development-Papers/ADP_01_2021_MARIFUTURE.pdf

10. Ziarati, R. (2021) Improving the Mental Health of Seafarers and Eradicating Bullying at Sea - aCourse for Seafarers MariFuture, https://www.marifuture.org/Publications/Articles/Introduction_IO1.pdf