

## **PROMETHEAS Project - Mental Health Data Research Hub for Seafarers**

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### **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 at C4FF has shown that many seafarers endure a range of stressful situations and this is often not seriously studied.

This paper reports 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 finding 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 are 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 major subject of interest in the PROMETHEAS project but the work on bullying is planned for another paper which will explore the reason why it is important to study the causes and effects of bullying?

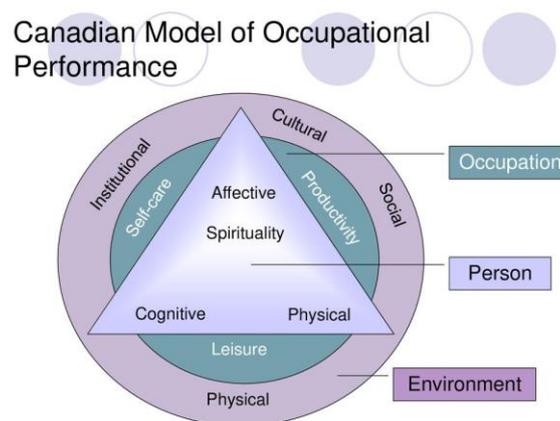
The paper offers a number of practical solutions to achieve a high level of mental hygiene and have some understanding of the affects of the medicinal remedies. The main purpose of this paper is to gather sufficient data and establish a data hub for mental well being of seafarers so that sufficient information is gathered for legislators helping to bring about new rules and regulations to improve mental health at 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.

### **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, similar 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 the seafaring profession is a highly hierarchical micro- society. What is it specifically, about working at 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)<sup>1</sup>.



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

<sup>1</sup> Ziarati et al. (2020), October/November 2020 marifuture.org Development Paper

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 emotions.

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 Traveller, 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.

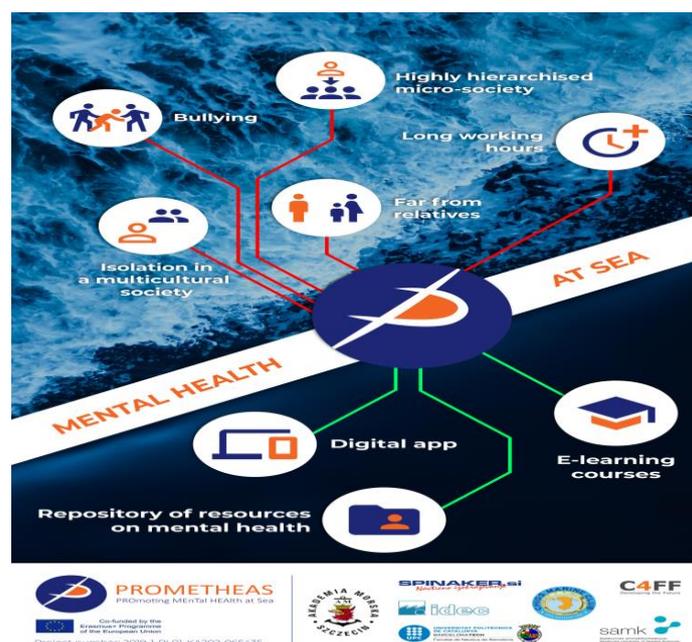
Szymanska et al (2006, in Iverson, 2012), has studied suicide trends among Polish seamen from 1969–1999. The researchers found that out of "324 total deaths there were 33 suicides — 10.2% of seafarer deaths, which was significantly higher than the incidence of suicides among the male Polish

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 in seafarers’ lifestyles (Roberts et al, 2010, in AndruĹkienė, Barsevičienė and Varoneckas, 2016). AndruĹkienė, 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 ones overall health. Nevertheless, there are many more factors involved at play in terms of the overall influences that may affect ones 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, shares its knowledge of mental health, what is it, 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:



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 the PROMETHEAS research involved carrying out a survey<sup>2</sup> and a desk research<sup>3</sup> 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 welcomed 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 to improve mental health in shipping industry through learning from each other and acting together particularly finding way to improve legislation concerning work patterns 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).

### Identified Problems and Solutions

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>• ID P_001</li> <li>• Title Boredom</li> <li>• Description - Boredom is usually experienced when workers face a monotonous life along with frustration, according to the paper. This combination is often found among <b>seafarers</b>, because of the monotony of work onboard, routine deck-work or using machinery, being on watch, or doing maintenance tasks, especially at sea.</li> <li>• Solutions: S_001, S_002, S_004, S_005, S_007-015</li> <li>• Related documents - D_001<br/><a href="#">Don't forget about seafarer's boredom   Jegaden   International Maritime Health (viaimedica.pl)</a></li> </ul> | <ul style="list-style-type: none"> <li>• ID S_001</li> <li>• Title - Take time out</li> <li>• 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.</li> <li>• Related documents: Information on Reading material, Internet resources, Yoga, Martial Arts, Music and so forth.</li> <li>• Sample Document: By Dominique Jegaden, Myriam Menaheze, David Lucas, Brice Loddé, Jean-Dominique Dewitte - DOI: 10.5603/IMH.2019.0013</li> </ul> |
|--|---|



<sup>2</sup> Annex 2

<sup>3</sup> [https://www.marifuture.org/Reports/Development-Papers/ADP\\_11\\_2020\\_MARIFUTURE.pdf](https://www.marifuture.org/Reports/Development-Papers/ADP_11_2020_MARIFUTURE.pdf)

The intention is to develop depository of problems and by using intelligence means to cross-reference problems with a list of possible solutions 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 dividing 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 outlined 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

More on each of the above in the following paragraphs.

### 1. Factors Putting Pressure on Mental Health at Sea

This section deals with ways to determine what the factors are putting pressure on the mental health of marines at Sea. It introduces the different causes of pressure that can affect mental health whilst at Sea; it explores the explanations as to how these causes could be solved or improved upon and determines why exactly being at sea can apply different pressures on mental health. For possible causes affecting mental health and identified solutions refer to Annex 1. Figure 1. below which lists the key physical, psychological and behavioural factors putting pressure on mental health.

#### FACTORS PUTTING PRESSURE ON MENTAL HEALTH AT SEA

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

Fig 1. Factors Putting Pressure on Mental Health

## **Indicators of Poor Mental Health**

When a seafarer is experiencing mental ill health, they will show a variety of signs and symptoms. The most important indicator that ship crew can identify is a change in behaviour and/or attitude of a crew member that they work with as change in behaviour can often indicate a problem. More specific signs will include physical, psychological and behavioural indicators as outlined above. Where a crew member displays a number of the symptoms listed in the table above, and/or symptoms are severe, they may be facing a mental health crisis.

Signs that a crisis may be occurring may include:

- Breaking down in tears
- Having a panic attack
- Talking of suicide
- Behaving in unusual ways
- Totally withdrawing from people, and/or
- Experiencing a different reality (psychosis)

The second step is to find the organisational factors causing mental anxiety and find means to mitigate them.

## **2. Organisational Factors and How to Mitigate Them**

This section covers the means to identify what organisational factors are present and which one is causing adverse mental impact with a view to provide solutions and to establish guidelines to prevent these factors affecting mental health. The section introduces the different organisational pressures that can affect mental health, honing in directly on the factors at sea, whilst comparing the issues with general work related risk factors.

There are a number of risk factors that can increase the risk of a seafarer experiencing mental ill health. Factors may be temporary, causing short-term mental ill health or distress, or long-term, leading to more serious mental disorder. The risk factors may arise from inside the work environment, in this case on board a vessel or may arise from outside such as in the seafarer's home and social life environment. Factors outside the vessel may not appear to be the concern of a ship's captain, however it may affect the crew member's work and/or his/her colleagues work and performance or the well-being of the ship operations.

It is important that ship's captain and the shipping company consider the support they can offer to the affected crew member even if the factor(s) is(are) outside the ship's control. Often it is a combination of factors from inside and outside the workplace that lead to stress, anxiety and ultimately mental ill health.

### Organisational Causes Affecting Mental Health

- Health and safety policies that are missing or inadequate – leading to stress and other health and safety issues on board as opportunities are not in place to identify and manage them appropriately.
- Poor communication – resulting in confusion and not knowing what to do and feeling that the crew is not supported.
- Poor management practices - failing to explain roles and responsibilities, unclear reporting lines, failure to provide sufficient resources and failure to manage crew effectively.
- Inflexible working hours and long stints which do not support seafarers in managing work/life balance.
- Giving seafarers tasks which are unsuitable for their competencies or insufficient training or knowledge and support provided with tasks which may lead to non-achievement of objectives.
- High or unrelenting workloads requirements which mean seafarers do not have time to complete tasks.
- Unfair distribution of group work where one person is not doing their job properly and others have to compensate for them.
- Lack of procedure to deal with bullying or psychological harassment.

### Other Causes Affecting Mental Health

- Vulnerability such as low self-esteem and insecurity or inadequate coping mechanisms that seafarers may experience.
- Lifestyle choices, for example alcohol and drug use which can put seafarers at risk of developing mental health problems.
- Family history of mental ill health which may be hereditary.
- Problems at home such as domestic violence, neglect, divorce or family breakdown.
- Feeling cut off from family and friends or from the local community which can lead to feelings of isolation or rejection.
- Negative or traumatic life experiences such as threat of unemployment, homelessness, bereavement, sudden illness, or being assaulted or abused.
- Big life changes even where these are positive such as getting married, having children or moving home which can be stressful.
- Financial worries arising from threat of unemployment, redundancy or business failure as well as mounting debt or worries about the managing the cost of living.
- Community or local environmental problems such as prejudice and discrimination, violence and crime or poor living conditions.

### Work Related Risk Factors for Mental Health

- Commercial Pressure
- Personal relationship problems

- Team Dynamics
- Chemical imbalance
- Childhood trauma not identified during the selection/recruitment process but has an impact at work
- Harassment on board
- Genetics not identified during the selection/recruitment process but has an impact at work
- Being bullied by a colleague
- Isolation/Social interaction
- Work fatigue

The third step is to find out how positive attitude can be developed and explore tips to think positively.

### **3. Positive Attitude and Tips to Think Positively**

This section provide means to develop ability to define what positive attitude is, recognise why positive attitude is good for you, determine how to think positively, discover what can be done to think positively. The section introduces ‘positive attitude’, helping to understand why it is so important to have a positive attitude, realising also the detrimental effect of negative thinking on their mental health. They will explore activities which will shift their mind state to one of positivity. They will be given tips on how to achieve thinking positively.

The fourth step is to find out more about physical exercises and how they can help to reduce stress and anxiety.

### **4. Physical exercise and its impact**

This section is to help the seafarers to discover what exercises has benefits to mental health and recognise how physical exercise can help. The determination of what impact physical exercise has on mental health is an important consideration here. The section introduces the impact that physical exercise has on one’s mental health, highlighting the benefits physical exercise offers as well as exploring the different exercise options they could carry out even at sea where there may not be a gym on board. The fifth step is to learn to reflect on situations and learn to cope with the cause(s) of mental illnesses.

### **5. Reflection on the Situation**

This section helps developing skills to understand why reflecting on a situation is important and recognise the situations that need reflecting on and thus being able to produce means to manage and implement the findings from the reflection. The section introduces the reason why reflecting on a situation is essential, it will allow seafarers to have an understanding as to what to reflect

upon and how to reflect upon a situation, they will explore the techniques in which can help to practice reflecting on a situation.

## **6. Distinction between Facts and Statements**

This section helps to define facts and statements, differentiate between the two and recognise why knowing the difference is important and why the distinction between the two has impacts on the wellbeing of mental health. The seventh step is how to think constructively.

## **7. How to Think Constructively**

This section provides means to determine what constructive thinking is and determines how and when to do constructive thinking. It introduces the seafarer to the idea of constructive thinking and how it will benefit him/her and how the constructive thinking impacts on mental health.

Step eight concerns human relations and the importance of learning to work as a member of a team and the ability to develop oneself.

## **8. Human Relations**

This section helps define what is meant by Human Relations and ascertains the purpose of and what emanates from human relations. It makes the seafarer learn about human relations, looking into why cultivating a positive workplace culture at sea will benefit his/her mental health and the atmosphere on board. The ninth step is Group Dynamics to emphasise the importance of good working practices and constructive relationships on board.

## **9. Group Dynamics**

This section defines what is meant by Group Dynamics, determines what group dynamics does, recognises why it is important to understand group dynamics and how to strengthen group dynamics if it is undervalued. This section will explore the concept of group dynamics and why poor group dynamics can affect a seafarer's mental health when at sea. To understand the nine steps outlined 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 the learning process and a way to do carry out self-assessment. An example is provided as follows:

## FACTORS PUTTING PRESSURE ON MENTAL HEALTH AT SEA: EXAMPLE QUIZ

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

Answers:

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

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

**Figure 2. A Sample Quiz**

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