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**SEAFARERS MENTAL HEALTH AND
WELL-BEING**

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Abstract

The present study was completed through five chapters and dealt with the issue of mental fatigue and resilience of seafarers in the context of the pandemic. The factors that caused signs of high fatigue in sailors at sea were examined. A role in this was played by the long period of stay at sea due to blockades at sea with movement restrictions. Seafarers away from their families for long periods showed symptoms of intense stress, mental fatigue and illness with the possibility of human error always on the surface.

Research was carried out through a systematic review according to which 25 articles were analyzed on the subject of the study where it was studied whether the mental health of seafarers has an effect on the efficiency of ships and how this affects shipping companies. Through the research it was concluded that the physical and mental fatigue of the sailors on the ship is treatable. Also, exercise and any form of physical activity that works beneficially for the physical and mental health of employees plays a big role. Finally, it is deemed necessary for the seafarer to remain on leave while working so that he has time to rest and better prepare for his next voyage.

Keywords: Seafarers, pandemic, physical fatigue, mental fatigue, pandemic, stress, mental illness.

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Chapter 1: Introduction

The safety of ships at sea has been, and will continue to be, one of the main concerns in the shipping industry. Since it cannot be completely guaranteed, all those working in the field constantly strive to improve it. However, the fact that these actions are frequently sporadic and typically taken after a significant accident with the primary goal of tempering public opinion is what causes dissatisfaction. In terms of safety, shipping lags behind other sectors like the nuclear and aviation industries. As a result, it frequently finds itself in the awkward position of having to list damages to the environment, cargo, or even worse, human lives, where the effects and reactions are much more severe and completely justified. (Sampson & Ellis 2019).

As a result, the importance of safety increases, especially on passenger ships, which are the most accident-prone, and its improvement is a crucial issue. Find the generative and root causes of any issue before trying to solve it. There is one underlying factor that accounts for two out of every three passenger ship maritime mishaps. In all types of workplaces, it is the same one that is responsible for about 85% of accidents: the human factor (Acejo, 2012).

Excessive seafarer fatigue, erroneous reasoning, and poor decision-making can all have detrimental effects on complex systems, especially when they are being maintained or designed. Muscle pain, apathy, and a lack of motivation are common symptoms of burnout, as are difficulties focusing or learning new skills, headaches, irritability, or discomfort, slow response times, and even vision issues like blurriness. Burnout symptoms can also be mental or emotional. These symptoms can appear a few hours or even the next day after an activity and usually get worse afterward. Being overweight, experiencing times of emotional stress, and consuming too much caffeine all seem to increase the likelihood of it happening. The disorder known as chronic fatigue syndrome is characterized by extreme physical and mental exhaustion. Patients with chronic fatigue syndrome do not experience relief after rest; rather, their fatigue gets worse. (Acejo, 2012).

Chronic fatigue patients may experience these symptoms over time, eventually making it difficult for them to function normally. The medical community did not accept chronic fatigue syndrome for a very long time. Unfortunately, some medical professionals still think that patients are hallucinating, as was the case in classical

medicine, which regarded sufferers as fugitives or delusional patients. Fortunately for the majority of doctors, research programs are being conducted to better understand the causes of chronic fatigue syndrome, to improve diagnosis, to lessen symptoms, and to discover treatments for symptoms. In addition to being unable to care for themselves, people who experience fatigue frequently are also unable to fulfill their obligations to their families and employers. Chronic fatigue syndrome typically causes a significant reduction in physical activity due to the extreme fatigue. Any type of exercise, whether it be physical or mental, has the potential to leave one feeling so exhausted that it becomes impossible for them to handle their day-to-day responsibilities. People who have chronic fatigue syndrome may lose their jobs because they are no longer able to function effectively at work. (Lucas et al., 2021).

When chronic fatigue syndrome becomes severe, a person may start to lead a sedentary lifestyle, which can result in obesity and heart disease, among other health issues. Particularly when patients are unable to perform their physical and mental tasks, chronic fatigue syndrome can also have emotional effects. Patients may experience depression if they do not find acceptance of their illness at work or in their social environment because the diagnosis of chronic fatigue syndrome has been controversial (Sampson & Ellis 2019).

In contrast, anxiety is a persistent state of feeling extremely stressed, uncomfortable, and tense. If a person's stress levels are so high that they interfere with their daily activities and keep them from achieving their goals, they may be suffering from anxiety. Anxiety is bad, and stress is good. Anxiety, on the other hand, is the issue that saps our energy and makes it difficult for us to relax. Stress is productive.

Unquestionably, there are risks associated with the seafaring profession that are absent from many other professions, as crews frequently work in fear of accidents, illnesses, and even piracy incidents. Seafarers who frequently experience stress and pressure need psychological or psychiatric support, as experts point out that in the case of a drastic change in behavior, this is necessary. It is noted that stress in seafarers may come from personal reasons but also from conditions directly related to their profession, with common symptoms being rapid heartbeat, intense sweating, shortness of breath, chest pain, nausea, chills, and dizziness. (Lucas et al., 2021).

A tremendous amount of psychological pressure is put on them by the blockades from ports and the general pressure to keep performing their

work effectively and safely. The situation clearly gets worse if we include reports that procurement problems exist in some areas. The most significant factors that adversely impact seafarers' mental health while they are at sea include stress, social isolation, work pressure, and sleep disturbances. In this situation, masters and chief officers have a crucial role to play in promoting and safeguarding the mental health of their crew members. This makes having a particularly organized and supportive environment on board that promotes candid communication and is governed by respect and recognition for all employees, regardless of rank, a necessary condition. (Widell, Damm and Gran, 2015).

Working away from home at sea with limited means of communication and little or no leave to stay ashore means that it can be difficult for seafarers to access the emotional support they may need. It contains coping skills, exercises and strategies to help sailors deal with their emotions when experiencing stress or low self-confidence, including examples of positive coping statements and guidance on using mindfulness to cope with stressful situations. Poor interpersonal relationships at work are considered one of the most important factors in creating stress and anxiety. Bad or even problematic interpersonal relationships can take various forms such as: social isolation, problematic relationships with superiors, interpersonal conflicts, lack of support and bullying, violence at work. Especially on a ship, where people are in a confined space and constantly interacting with each other, the above critical issues increase the possibility of problematic relationships among seafarers that can undoubtedly affect the safety and teamwork required. A necessary condition to deal with the difficulties and problems encountered in interpersonal relationships is a better understanding of our own behavior and that of those around us. The totality of verbal and non-verbal communication is essentially the only vehicle to convey – and share – our ideas, expectations and feelings. The clearer and more mutual the communication codes are, the more effective interpersonal communication becomes (Widell, Damm and Gran, 2015).

The purpose of this study is to investigate the mental health and well-being of seafarers, especially during the pandemic. The individual objectives are the following:

The investigation of the maritime profession and their state of mental health.

Exploring seafarers' motivation and resilience levels.

A study of the pandemic period in relation to the psychology of sailors

Investigation of factors on board that affect the health of the crew.

Study of factors affecting the performance of ships and shipping companies

Investigating strategies suitable for implementation

A research gap in this study is the seafarers' opinions on whether they are satisfied with their working time and the time they rest, as well as what their opinion would be about changes in work and rest periods.

In more detail, the work will be completed through four chapters where, more specifically, the first concerns the introduction, the second will focus on the literature review and the maritime profession as well as the mental health of seafarers, their work motivations as well as the time of the pandemic with all the changes it brought to working conditions. The third chapter concerns the methodology in which the data related to the way in which the research will be carried out will be recorded. In the fourth chapter on the results, all the results obtained from the research will be recorded while analysing how the pandemic affected the mental health of employees and what strategies should be implemented. Finally, the paper will close with the overall conclusions.

Chapter 2: Literature Review

2.1 The seafaring profession

The total global fleet at the start of 2020 consisted of 98,140 ships with a gross tonnage of 100 or more, according to the United Nations Conference on Trade and Development (UNCTAD). The contribution of seafarers is crucial to the sustainability of these ships and, consequently, crucial supply chains. In order for the world to receive the goods and products required for daily life, nearly 2 million sailors are employed in global shipping. In order to restore the sailors, ensure adherence to maritime conventions, and ensure the passengers' safety, health, and well-being, approximately 150,000 switches are required each month. As of 2019, Sampson and Ellis. The international agreement that specifies the rights of seafarers and their working and living conditions at sea is the Maritime Labor Convention, 2006 as amended (MLC 2006), which was created by the International Labor Organization (ILO). According to the MLC 2006, a "seaman" is "any person employed or engaged or employed in any capacity on board a ship to which this Convention applies" (Sampson & Ellis, 2019).

Given the broad scope of this definition, it covers both traders and people employed in the shipping sector. But only inland watercraft, fishing vessels, conventional vessels, and naval vessels. The ability of the workforce to change when necessary is crucial if shipping is to continue to play a part in the continued operation of the global supply chain (Lucas et al., 2021).

The profession of the seafarer is anything but a special career choice as it combines a profession with a way of life. This peculiarity is due to the fact that seafarers will work and spend their personal time in the same place, i.e. the ship. It is therefore expected that work at sea has fundamental differences from work on land, not only in terms of working conditions but also in terms of lifestyle. Another important aspect of this profession is that sailors are forced to live for long periods of time away from family, friends and their lives on land. Although the advancement in technology has made it possible to communicate the distance caused by the absence of physical presence creates adjustment problems for seafarers when they return to their families and a lot of stress to adjust when the lose and re-enter a new way of life (Nurcholis & Qurniawati, 2020).

However, the reason for choosing such a profession with such results seems to be to get a higher salary compared to national professions. Feeling less space and changing body posture can lead to instability and increased pressure. Now it is clear that the working conditions have changed due to the development of technology and different systems, where to reduce the processing time in different ports, it has caused problems in the way of shipping (Muslu, 2020).

These hardships make the restrictions more severe, making seafarers feel isolated with all the consequences this creates for their mental state. Most of the issues related to working conditions are caused by people who are often unaware of the reality and daily life of marine workers. In addition, the risks associated with the shipping industry are many and varied. Many times, the lives of seafarers and their health are at risk through accidents related to natural phenomena or criminal activities such as piracy in various regions. In addition, seafarers take on great and serious responsibilities since their profession has been criminalized many times after various accidents that caused damage to the environment and more. Therefore, despite the efforts made to avoid accidents, those who are responsible for the activities that take place on the ship, and everything related to it are usually blamed for the consequences (Sampson & Ellis, 2021).

Despite more than two decades of credible warnings about the dire consequences of this scarcity, there is still no adequate response to address the problem, either from stakeholders or flag states. Factors such as the increased criminalization of the maritime industry (considered the majority of documented cases) have contributed to exacerbating recruitment and retention problems. (BIMCO/ISF, 2010).

The staffing of the existing officer is a big challenge for the industry. Even the significant decline in sea trade in the past year could not eliminate the need for skilled and motivated workers. When growth comes, there will no doubt be more serious questions about the industry's ability to find enough quality seafarers to serve the ever-increasing technology and meet the stringent regulatory requirements placed on shipping. And in the long term, the number of seafarers also presents a great challenge not only to the sustainability of maritime transport, but also to many industries and national services that require highly skilled seafarers. (BIMCO/ISF, 2010).

If industry and flag states want to address this crisis in a meaningful way, they must look beyond the basic needs of providing adequate training facilities and fleets.

Seafarers must be properly recruited and properly trained throughout their careers, provided with good wages and decent working conditions and working hours, and provided with good recreational and recreational facilities at sea and in port ships and the business that will encourage them to stay in the sea industry. They must be supported by a new positive political and public opinion that recognizes their role and contribution to the economy and society. Adhering to ILO standards, fighting crime through "justice" principles, and addressing the bias shown in maritime sanctions are all necessary measures that governments must promote to bring about change on how to treat seamen (BIMCO/ISF, 2010).

Today, employers need suitable employees, while employees need to improve their skills through employees. Employers often report that there is a shortage of skilled workers for the positions they offer, while workers often miss the opportunity to develop their skills in the way they prefer. The criteria for maritime work, generally, are ship owners, who prefer to develop technology rather than human skills. In 2015, a study on the development of human resources in the European maritime sector concluded as follows (Widell, Damm and Gran, 2015):

1. The reason for the problem of recruiting workers in the current agenda in the maritime sector is the result of the lack of professional maritime officials, that is, the lack of professional workers who are responsible for managing the traffic of ships which can be described as an important work of the sector.
2. It seems that no effort has been made to improve HRM capacity in the field, and for this reason it is no longer known how seafarers cope with their working conditions, but also what career paths they follow and prefer to follow. Educational opportunities need to be expanded, but such expansion requires demand, and demand can only increase if working conditions are developed and defined in ways that attract new generations. Many international and community efforts in recent years have focused on regional and regional development, such as the development of water resource associations. These clusters have led to increased productivity and productivity as well as competition with win-win effects for the parties involved. Perhaps, however, this development has increased the number of naval officers leaving their careers at sea, while they enjoy growing up on land, closer to home and family. The skills and techniques of human resource development can have and relax

from the effects of clustering. The development of industrial relations and the development of local relations between employers and employees are important for the future development of the sector. (Lucas et al., 2021).

Long working hours are also far from home, away from colleagues, family and friends. Distance from children is considered especially important when a seafarer is a parent. Often, having a child is a deciding factor in a sailor's choice of career path. Women seafarers traditionally understand the difficulties of continuing to work at sea when they have children. The movement for equality, especially in Western countries and especially in Scandinavia, also affects men who struggle to be fathers. This development creates a complex problem for the entire shipping industry (Acejo, 2012).

Of course, cultural differences are still important. Perceptions of working at sea and the relationship between work life and family life vary according to culture, norms, customs and social and political conditions. Acejo (2012) interviewed Filipino seafarers on a boat in the Philippines and in a Philippine village, as well as seafarers living in the home. He described long-term homelessness as a form of self-expression associated with seafaring and that it improved the family environment. Seafarers are traditionally able to send money home and to their families, contributing to financial prosperity.

The most important reason to continue working at sea is probably to maintain a good relationship with your partner, family and children. The difference between life at sea and life on land creates some challenges and hardships, not only for seafarers, but also for their partners and children. According to a study by Thomas (2003), the most difficult times for seafarers and families are the transition from sea to shore and the transition from home to sea. Presumably, culture and other changing parameters differ between different regions of the world. Wissö (2012) completed a study on Swedish families with young children who prioritized "togetherness time" above all, that is, when the whole family does some activity together or just spends time together.

2.2.1 Mental health of seafarers

When a seafarer faces a challenge and feels that his life is at risk, he feels anxious. Stress can be an element of the personality of every person and every professional such as seafarers, or it can appear occasionally. It is experienced to a different degree and intensity by each seafarer, affecting his mental health. If stress is compared to anxiety,

it is possible to represent the process as follows: the stressful stimulus activates the stress process and thus the person experiences anxiety (Sampson & Ellis, 2019).

Since the term is frequently overused or generalized, not everyone will associate stress with the same phenomenon. All living things maintain a state of dynamic equilibrium, which is brought on by stimuli coming either from the environment or from the organism itself. The Latin words *strictus* and *stringere* (tight/narrow, passive participle meaning to tighten, make something tighter) are the source of the English word "stress," which is where the term "stress" originated. Stress can be defined as the state of imminent or actual change in the homeostasis (equilibrium) of the organism from any cause. The goal of the stress response is to maintain balance and may include physical and behavioral responses. Stressors are any external or internal stimulus that can create stress (that is, change the balance of our organism). It is important to consider that a factor can cause stress in one person and not in another person. A person's individual abilities, self-esteem, past experiences, psychological makeup, social support, etc., determine what each person considers stressful or not (Jonglertmontree et al., 2022).

Most seafarers feel pressure in their workplace. Workplace-related stress refers to the harmful physical and emotional reactions that occur when the demands of one's job do not match their abilities or needs. According to Varvogli (2006) 25% of seafarers consider work as the number one stressor in their lives. 75% of seafarers believe that today's workers have more work-related stress than a generation ago. Finally, he states that work problems are more related to health problems than other stressors in a person's life.

It is generally accepted that occupational stress and the burden of mental health originates from the influence of working conditions, although there is disagreement about what is more important in causing it: the characteristics of the individual or the working conditions. Wellness is defined as "a continuous and active process, in which each seafarer realizes and learns that there are options that can lead them to a longer and better quality of life, to a more general 'well-being'" (Lucas et al., 2021).

Many seafarers, when faced with the challenges and difficulties that arise in their work, overcome them, experience feelings of relaxation and satisfaction. The challenge activates seafarers physiologically and psychologically motivating them to develop their knowledge and become more efficient.

The phrase "a little stress is good" perfectly captures the essence of the difficulty. When evaluating the demands of the job, it's crucial to distinguish between situations that, while demanding and occasionally challenging, are characterized by a supportive work environment that gives employees the motivation and training they need to perform to the best of their abilities, and psychosocial risks like an excessive workload.

According to Mellbye and Carter (2017), a positive work environment improves employees' performance, personal growth, and overall mental and physical health.

Psychological risk arises from problem planning, organization and management of work, as well as from the negative social environment of work and can lead to negative psychological, physical and social consequences such as work-related stress, burnout or depression. With the right approach, you can prevent and successfully manage psychosocial risks and occupational stress, regardless of the size or type of business. They can be dealt with in a reasonable and systematic way like other risks to safety and health at work, such as stress management, in addition to being a moral obligation and a good investment for transport companies, and It is a legal obligation (Sampson & Ellis, 2021).

According to findings of the European Research on Working Conditions (Eurofound, 2020), 46.5% of workers in Europe complain of lower back pain, and 45% of muscle pain. One in two workers including seafarers in Europe report working in conditions that causes pain. Every year millions of European workers in different professions suffer from musculoskeletal disorders that can even lead to permanent disability and loss of work (European Agency for Safety and Health at Work, 2020), while the cost of these disruptions for workers amounts to billions of euros. And those who are mainly affected, as the research shows, are office workers or machine users who repeat the same movement throughout the day. It is understood that seafarers also face similar problems, especially those who work in the ship's engine room, where space is limited and working conditions quite difficult.

Seafarers' families play an important role, both in supporting them and in responding to an incident. Good practices and procedures can help a shipping company, and ultimately seafarers and their families, in the event of incidents (ISWAN, 2018).

In the event of an incident, the situation will be made much easier if the preparations described in the previous section have been completed. The next steps a shipping company should take are as follows (ISWAN, 2018):

1. Developing a timeline of what is urgent, what needs to be done in the first few days, and what can be dealt with in the long- term.
2. Activating the Family Link Group as soon as possible.
3. Ensuring that the company is the first to tell the family about the incident, before they hear anything from another source.
4. Telephone communication or even in person, if necessary. Where the family does not have access to a telephone, the agency should contact a local support organization, such as a suitably trained representative of a welfare association, who can put the family in touch by telephone or relay an initial message to enable the company to get in touch.

In 2011, Shell created a program on human factor resilience with an emphasis on shipping. It is a free and easy-to-use program that does not require much time. In fact, this Shell program has proven real results since its inception, as significant positive effects have been observed in both the level of engagement and the level of safety in the participating teams.

This program consists of five core modules, each lasting between 30 minutes and 1 hour and can be delivered by a volunteer “facilitator”. Each module focuses on a different area that makes up people’s natural ability to deal with life’s challenges. The five modules are as follows:

1. What is resilience?
2. Take a decisive action
3. Put things in perspective
4. Change is a part of life
5. Take care of yourself

By improving resilience, ships’ personnel have a more positive mindset and a wider range of strategies at hand to deal with everyday problems, both at home and on board. They are also able to cope more effectively with life’s bigger problems, such as a change in work or having personal family problems.

Shell’s resilience program includes everything needed for ship’s personnel to successfully complete the five modules. No additional qualification is required. To

carry out the modules, the program is constructed using a facilitator guide and a participant guide, while having the necessary materials for each module.

Specifically, a volunteer facilitator (e.g., a security officer or a chief officer, etc.) is required to deliver the modules. This person does not need any special qualifications or training but should be someone who can speak confidently and enthusiastically after reading about the subject using the material.

The facilitator should aim to deliver all five modules within five months, i.e., one module per month and then continue to repeat the modules. It does not matter in which order the modules are delivered and it is not critical that participants participate in each module.

2.2 Life onboard vessels

A ship operates 24 hours a day. A basic principle for the execution of the processes performed on board a ship is its crew. Hence the question that arises is what does the term “ship crew” mean and what constitutes it. According to the Code of Private Maritime Law and the Code of Public Maritime Law, the term crew refers to all the sailors (except the Captain), who have a seaman’s book, i.e. are registered and serve the ship as officers or junior crew. According to the law the crew consists of seafarers who have in their possession the corresponding proof of naval ability (Turgo, 2020).

The crew can also be made up of scientists or experts who have a license to practice. The law is complemented by presidential decrees on the total number of the crew members as well as the ranks and specializations required, always and initially based on the type of ship. Various articles in the presidential decrees answer questions about the composition of the crew while it is noted that the organic composition of the crew is mandatory and only through some exceptions a ship is allowed to sail with insufficient number of crew numbers. Such exceptions, however, can only be accepted when the safety of the ship and its crew is not endangered. Factors that determine the composition of the crew are the different categories of ships, tonnage, type, engine power and cruises performed. The crew is therefore the total number of people employed on board a ship, besides the Captain, and have specific duties (Baygi et al., 2022). Seafarers have a right to at least 2.5 calendar days of annual leave for every month they work, as stated in MLC Standard A2.4 of 2006.

To keep supply chains open, governments must make sure that crew changes are efficient and safe. As previously stated, in order to comply with international maritime safety, health, and welfare regulations and to prevent fatigue, roughly 150,000 seafarers must change and subsequently move to and from the ships they work on each month (Dachev and Lazarov, 2019).

Sailor has the opposite meanings of tired, away from family for a long time, and danger. Awe-inspiringly, becoming a seaman requires a person to have a deep love for the ocean, to be willing to spend more than six months at sea with strangers, and to face a variety of unpredictable circumstances every day.

The seafarer must deal with a variety of risks, including dangers from all directions, being apart from loved ones, living with strangers, the ship's constant movement, a lack of social opportunities and entertainment, an unpredictable sleep schedule, long workdays, and inadequate medical care.

One of the key elements that contributes to fatigue and burnout in crew members is their total work time. People aren't looking for the job in question because they are too busy, far from their loved ones, or have to work hard. Seafarers now have a suitable system of shifts and working hours thanks to the International Maritime Organization (IMO) and the International Conference on Working Hours in Shipping.

First, rule 2.3 has been drafted based on the international convention on working hours in shipping and it specifies how working hours for crew members on ships should be organized. In order to ensure that seafarers' working hours and rest periods are set, this Act was created. First, it is clarified that the term "working time" refers to the hours that the crew must work on behalf of the ship, whereas the term "rest periods" refers to downtime and periods when people are not at work. The standard workday for seafarers and all other employees in all industries is eight hours, plus one day off per person and required holidays.

The United Nations has established restrictions on states' ability to work in terms of hours. In particular, it is forbidden for the typical workweek in navigation to exceed fourteen (14) hours over twenty-four (24) hours and seventy-two (72) hours over 24-hour period seven days a week. The minimum amount of rest is also limited to no less than ten (10) hours every twenty-four hours and seventy-seven (77) hours per week. The remaining hours can then be split into two periods, the first of

which must be six (6) hours long. States are then free to pass legislation to do this. It should be noted that the Law requires that all training and exercises take place at times that do not conflict with employees' right to rest. Listing the total number of hours worked by each employee on specific forms and in easily accessible locations is another requirement for the business that owns the aircraft. The work schedule and legal working hours must be displayed on the forms. Additionally, daily logs of working hours must be kept so that they can be followed. It should be emphasized at this point that the Master may request any employee to act more when the safety of the vessel or its passengers is at risk, or, finally, when assistance is provided to passing vessels or mariners in need of protection. After the alarm has been silenced, the master must ensure that the crew has had enough sleep. In conclusion, Rule 2.3 emphasizes that each country must decide the maximum number of working hours while always adhering to its obligation to not exceed the limits imposed by the Law, within the allotted time, or more less number of hours of rest in a limited time. It is important to take into account the risk of fatigue and fatigue among seafarers when developing national laws, particularly for those who are involved in navigation and safety (Milde, 2011).

The International Maritime Organization cannot be complacent about a pressing issue facing shipping like the hours of work that employees put in. In particular, number 180 has already been established since 1996 and has the title of Workers' Conference.

This Convention offers a framework for determining the maximum working hours and rest periods for seafarers in order to guarantee the ship's safe navigation. The Convention firstly permits the presence of a working hours table on board in a way that enables crew members to determine the daily and weekly working hours. During the control that the ships are under, a specific table may be presented concurrently. The organization needs a clearly defined plan that outlines the intended work schedule as well as the typical working and resting hours for each employee. Last but not least, the form must have the employer's signature to attest to the crew members' precise work and rest periods (IMO/ILO, 1999).

It is the responsibility of the competent authority of the state to determine the appropriate procedures regarding the maintenance of specific information on board. At the same time, he must organize the files according to the IMO guidelines. Therefore,

he must periodically review and verify the information to ensure their effective implementation and relevance in investigative cases and during the investigation of complaints. Therefore, in the ship, the master must ensure that the appropriate rules for the crew's hours and rest are observed, because if not, the national authorities must take measures to be appropriate to avoid the possibility of violating hours in the plane future ship work. First of all, the governments of the states must take the necessary measures and impose sanctions, in order to ensure the implementation of the provisions of this agreement. Therefore, they must have an appropriate inspection service to ensure compliance with the regulations that all shipping companies operate in their country. Finally, they must, after consultation with the maritime stakeholders, consider the validity of the complaints that can be made about any issue related to the working hours of the boat. In the event that a seafarer is placed on standby, it is important that they have adequate compensatory leave. In addition, each seafarer must have a copy of the documents related to him, approved by the master. The IMO itself in this agreement has laid the groundwork to combat or reduce the incidence of maritime fatigue. It is emphasized that all those involved in navigation must be careful about the causes of fatigue. All provisions of the Agreement aim to prevent fatigue to avoid excessive or unfair working hours. Permits and their duration are factors that cause fatigue among mariners (IMO/ILO, 1999).

One of the most important risk factors faced by seafarers worldwide is the diseases they have to deal with while travelling. The issue is compounded when one considers that for about half a year, they are at sea away from decent primary health care and appropriate medical care. First, people have to deal with any communicable diseases, the chances of their transmission being multiplied by the fact of frequent contact with people from different origins as well as the places the ship travels. The most common communicable disease is malaria. At the same time, issues regarding blood diseases as well as sexually transmitted diseases are guaranteed. The most common cause of the development of communicable diseases is the fact that the crew live together, sharing food and water as well as sewage systems. In the case of communicable diseases, it is advisable to take preventive measures such as proper storage of water and food, access to safe medical services in ports, vaccination of the crew, provision of individual cabins to the workers and finally, timely treatment and isolation of the sick (Oldenburg et al., 2010).

It is also a fact that ship crews have higher rates of cancer than the general population. Factors related to prolonged sun exposure, lifestyle, alcohol consumption, smoking and diet are associated with increased rates of cancer in individuals. Also, an issue arises from the transport of toxic and chemicals inside the ship with which the crew is constantly in contact. It would be appropriate to have continuous staff training in conjunction with the safe handling of these dangerous substances. Also, seafarers should be informed about the harmful effects of smoking and drinking alcohol. Finally, seafarers who frequently come into contact with various toxic substances should undergo repeated examinations in order to detect dangerous exposures at an early stage (Oldenburg et al., 2010).

The success of global shipping is generally based on its workforce. The excruciating pressure they face, however, during work, is an important brake both for their own good health and for the progress of navigation worldwide. After all, seafarers' fatigue is one of the main factors causing accidents at sea. The exhausting fatigue of shipping workers can be associated with danger to the safety of human life, environmental contamination as well as loss on the ship itself. Chronic fatigue syndrome - Burn out - is a constant feeling of tiredness which can range from mild to severe and varies depending on the person's situation and their work. Although it is a normal consequence caused by work stress, in large dimensions it brings about negative consequences for both the individual and the organization. Causes of the syndrome are stress and various factors that create anxiety. Symptoms of the phenomenon are physical exhaustion and the creation of a feeling of negative attitude towards life, work and other people. The person becomes pessimistic and loses all interest in life, acquiring a sense of discomfort and dissatisfaction. Causes of the phenomenon are, among others, the separation of the person from his family and loved ones, loneliness, difficult work environment, lack of social life, fatigue, existence of multinational crews, lack of teamwork, fear of piracy, limited recreational activity, lack of communication with their family, lack of quality sleep and poor health care. It is a fact that seafarers are deprived of quality, quantity and duration of sleep depending on the schedules of the ships. At the same time, seafarers are required to spend an average of three (3) to five (5) months at sea. At the same time, the ship is both a place of work and leisure for the specific people (Patchiappane & Rengamani, 2017).

2.3 Incentives for seafarers

What motivates sailors in their work is not different from what motivates other professional groups in society. In addition to purely financial factors, work in modern society increasingly includes other values as a reason. According to the sociologist Mortimer (2018), since the industrial society was transformed into a society of knowledge and information, important changes have continued on the job. There has been a shift from purely financial incentives to a range of other incentives. Mortimer describes these non-financial indicators as the ability of employees to achieve higher levels, improve their identity and experience. Transportation, like other workplaces in our society, has been democratized, which may be a non-monetary motivator. Having a big impact on work performance, work environment and new values of leadership and teamwork are great examples. Another fact that distinguishes shipping from many other fields of work is the priority of risk and safety. Emergencies require quick decision-making and an effective organization on board needs to be combined with a democratic process. The development of democracy on ships is not just about officers and employees sitting at the same table or social interactions have changed and become easier and more comfortable. It also means more self-control and effectiveness in a clearly structured process (Ljung, 2010).

The conditions of becoming a seafarer have changed in recent years. The myth of an exciting and prosperous life at sea has been rejected by many. Further understanding of seafarers' motivations for choosing the profession may shed more light on recruitment issues and why seafarers leave the profession after a few years (Ljung, 2010). Maritime writer and founder of Marine Insight - The Maritime Industry Leader, Kantharia Raunek (2013), focused on the increasing trend of officers leaving the profession after a few years, despite the wide range of jobs and challenges working conditions. After conducting a survey of some naval officers from different countries, he found out some important things that the pilots had problems with.

Bad living: Different needs while working. At first the sailor appreciated the traveling, nomadic life. After many years, especially after starting a family, a healthy lifestyle is preferred. Raunek (2013) believes that this is a popular reason for leaving the sea, but it is also the main reason for dissatisfaction in the profession.

Unstable life: With the introduction of shipping regulations every year, the life of seafarers has become more hectic, tiring and rough. Increase administrative work;

Advanced training guidelines and strict safety and environmental regulations have made their daily lives more difficult.

In-cargo policy: A variety of conflicts are causing problems in work and social life among the already reduced crew. The fine line between work and personal life on board makes it especially difficult to manage conflicts that arise from differences of opinion.

Social deprivation: Limited space and reduced social life have led to feelings of loneliness, homelessness and frustration. Life on board at the start of the project may be considered good and then turn into isolated events.

Family estrangement: It is extremely stressful for seafarers to be away from their families, children and friends for long periods of time, sometimes for months. Getting married, becoming a new parent, and having to deal with parenting issues are especially painful. Many people understand the deep meaning in being with family and loved ones

Family problems: Not being able to be present when there are problems and problems in the family is considered very unfortunate. Worrying about not being able to help with problems leads to anxiety and insomnia.

Proliferation of piracy: Although many measures have been taken to combat piracy, piracy occurs almost every month. Sailors do not want to risk their lives or travel to areas affected by piracy.

Medical issues: The medical requirements of seafarers to join the ship are not compatible with life on board. Irregular sleep schedules, work stress, complications in the flight, poor food and inadequate medical care have a serious impact on the health of travelers. Others complain about the gap between working hours and holidays.

Reduced hours in port: The opportunity for the crew to be ashore, as the sailors are used to, has reduced significantly in recent days. With the ships moving fast in the harbor, there is no time to go out in the harbor, which prevents the ability to change the situation.

Lack of offshore jobs: Although shipping companies and shipping centers have promised to provide opportunities to work at sea, it is difficult for those who want to move to the coast to find satisfactory work.

Downsizing: The shipping industry, due to the global financial crisis, has reduced the number of workers to reduce the amount of money earned. Now, the sailors have increased their workload. This problem is observed in all shipping companies in the

world. Too much work with the same pay or poor compensation is the reason why some sailors leave the job at sea.

Strict laws: New strict maritime laws have emerged, creating "problems", especially for those in leadership positions. Many people have been in jail, received heavy fines, or been suspended from their jobs because of these laws. Many officials in leadership positions are affected by the law, which by extension causes a lot of stress.

2.4 Outbreak of Covid-19 pandemic

Many seafarers were unable to travel to and from their ship during the COVID-19 pandemic as a result of the unprecedented difficulties encountered in repatriating seafarers. The inability to replace seafarers whose employment contracts expired was caused initially by travel restrictions on international flights and the ban on change in some ports (Sliskovic, 2020). However, due to nationally adopted restrictions, which in some cases prevented seafarers from disembarking for crew changes, the seafarers' service was extended for many months at sea, far beyond the stipulated limits. Many times, after lengthy voyages, seafarers could not be replaced or airlifted back to their home nations. Such conditions are untenable for the crew members' health and safety as well as for the efficient operation of the maritime industry (Battineni et al., 2021).

Approximately 300,000 seafarers had requested international flights for crew changes by mid-June 2020. Also awaiting repatriation were 70,000 seafarers working on cruise ships. The crews of commercial fishing boats, which are a significant source of the world's food supply, must also be rotated periodically to prevent fatigue. On June 10, 2020, only 30% of governments worldwide permitted crew changes. The safety and well-being of seafarers as well as the efficient conduct of maritime trade cannot continue under the current circumstances (Baygi et al., 2021). The majority of the pandemic's effects on the onboard seafarers' physical and mental health. Although the concepts of mental and physical well-being are distinct, it is clear that seafarers exhibit common symptoms as a result of fatigue and uncertainty brought on by the current situation. (Pesel et al., 2020).

Typically, their mental state is described as mental exhaustion, anxiety, stress, nervousness, sadness, and depression. However, physical condition mainly refers

to fatigue brought on by long workdays and a heavy workload, as well as the impact of a psychological condition brought on by stress on the physical condition (e.g. medical conditions brought on by stress, sleep problems, etc.), as well as concern over a potential coronavirus infection brought on by disrespecting the ship as an enclosed space.

In some cases, mental and physical exhaustion, along with an unfavourable emotional state, caused a severe inability to focus and participate in work duties (e.g. "I'm totally worn out. I do not desire employment. My obligations and responsibilities are not important to me a feeling of disinterest in the ship"), which poses a significant risk to the ship's safety (Dolumbia-Henry, 2020).

"Feeling worse than in prison since I do not know the date of my release," was how one seafarer put it when his or her time on board had been extended after the employment contract was signed. Although seafarers are generally accustomed to working and living in a socially isolated environment, the fact that this isolation is now significantly prolonged to an unknown date, in addition to the limitations placed on disembarking leaves, has had a significant negative impact on their social well-being.

Fear for their loved ones due to the global pandemic exacerbated reports of loneliness and family disappearance. Last but not least, a feeling of alienation from the community and abandonment by organizations in charge of taking care of seafarers seriously undermine social well-being. The effects on financial prosperity were seen from the perspective of the seafarers who were at home. Their salary, which is frequently the largest source of family income, was the topic of their financial concerns. Since they are only paid when they are working and/or do not currently have a formal employment contract, a prolonged period spent at home means they have no income at all (Wong, 2021).

"I don't know how to take care of my family," is a succinct way to express the incapacity of seafarers, who are frequently the only source of income for their families. Because of this situation, many sailors lost their jobs. When it comes to whether and when the cruise industry will recover, seafarers working on passenger ships feel most threatened. Due to their prolonged residence, some seafarers mistakenly think that they are taking long vacations while still being paid. (Wong, 2021).

It is unclear how long this could last and how it will impact their future lives, so there are worries for them as well. A new worry for the seafarers is the possibility of paying high taxes at the end of the year because their prolonged stay at home will prevent the typical tax exemption based on working days in international shipping. In addition, restrictive measures have made it difficult for people to enroll in university courses and other types of education, i.e. the acquisition and/or renewal of various professional certificates that are necessary for their employment and/or promotion. Due to this, they felt poorly about their financial situation and potential careers. The mental and physical health of seafarers who stayed at home, however, could be seriously compromised by worries about money and uncertainty about the future. Uncertainty about the job has become a major source of stress in the shipping industry, which has a negative impact on the welfare of entire families and has caused job changes. Due to the fact that they end up spending more time with their families, seafarers are more tolerant of physical distance restrictions in terms of their social wellbeing (Wong, 2021). Blanco and Rosales (2020) claim that following the current COVID-19 crisis, "governance processes at different scales show problems of coordination, inequality, and power claims. On the plus side, the disease has received a favourable response from the entire shipping industry. For the purpose of removing obstacles to crew changes, the industry has united and created new standards. A number of rules created by numerous international business organizations that represent different facets of the maritime transport industry have been approved by the Secretary General of the IMO. To ensure that crew changes can be made safely during a disaster, the guidelines include general measures and procedures. Governments, shipping firms, and other national authorities are required to take the appropriate actions and make every effort to permit changes in the crew. Recommendations apply to maritime authorities as well as other pertinent national agencies, including those in charge of ports, health, immigration, border control, and customs and customs. They discuss the functions of shipping firms, agents, and representatives, as well as the crew and seafarers, and they close ports, airports, and airlines that are involved in travel operations for crew changes (Blanco and Rosales 2020)

The response to COVID-19 from those involved in the shipping industry is commendable and demonstrates their willingness to collaborate with the pertinent UN

agencies to offer Member States, ship owners, water and water bodies, and other non-governmental organizations comprehensive and coherent guidance to reduce the disease's effects on industries, particularly on marine workers. Stakeholders in the maritime industry, including the International Transport Forum (ITF) and the International Shipping Commission (ICS), have offered mutual advice to ship owners and seafarers. In order to open the main supply routes and enable the free flow of maritime trade, goods, and services during the COVID-19 crisis, they have prepared a number of preliminary recommendations for governments and national professional bodies. Shipowners' guidelines on the safety of seafarers are one of the guidance documents that the ICS also creates for the IMO to be published (Sossai et al., 2020).

Ship owners and stakeholder organizations have urged governments to make it easier for crew members to leave and return home. Access to the port, facilitating staff changes, facilitating port operations, and undertaking activities related to port safety measures are some of the steps that have been identified in this regard. The majority of the 22 letters that the IMO has issued have been created by shipping companies. International Maritime Organization (IMO), International Labor Organization (ILO), International Civil Aviation Organization (ICAO), and World Health Organization (WHO), which work and shipping agencies, including governments, provide assistance to member countries, shipping, fishing, ports, and aviation, which includes many issues to be addressed. Given that maritime workers are the ones who make it possible for goods to be transported and delivered to all nations in the world, including those that have imposed embargoes and goods arriving at international ports, the guidelines provided are very clear regarding human nature. All affected employees, including those on board and shore workers who might need to temporarily board ships or interact with mariners, must be protected from infection during a pandemic. A sincere resolution of differences in needs and expectations is necessary if the objective is to ensure an open understanding of each party's needs to manage the risks involved. The IMO Secretary-General reiterated earlier requests in a letter dated March 27, 2020, and stressed the significance of preventing illegal disruptions of maritime trade. The need for the proper approach in these extraordinary times with regard to matters such as crew changes, fuel, repairs, inspections, and the certification and licensing of mariners.

Seafarers are at the epicentre of the catastrophe that the world is currently experiencing. To support decisions requiring the use of personal protective equipment (PPE) to lower the risk of infection for seafarers, sailors, seafarers, passengers, and others in ships, WHO offers guidance on the safe and effective use of PPE. The directive also applies to seagoing vessels, including pilots, port officers, Port State control officers, and seafarers. The port governments have agreed, in consultation with the IMO and the ILO, to assist in addressing the issues of labor turnover, repatriation of seafarers, and the search and renewal of certificates during emergencies (Tzivakou, 2020).

Port authorities recognize that they can play a significant role through on-board inspections to monitor and enforce compliance with international standards, even though they typically view crew changes and repatriation as outside the scope of their responsibilities. For instance, port authorities can address worker fatigue-related safety concerns, particularly when ship contracts are extended in violation of the MLC 2006's time constraints. Port administrations take into consideration giving information that is pertinent to a particular circumstance (Kaptan & OlgunKaptan, 2021).

A straightforward system is provided for the evaluation of the risk and the notification of the control measures to be taken, by mutual agreement, to reduce the risk of infection while taking into account the differences in national needs. If boarding is not an option, simple safety precautions should be taken, such as limiting the number of passengers, taking alternate routes, and maintaining social distance (Kaptan & OlgunKaptan, 2021).

2.5 The resilience of seafarers

Shipping can provide capable and responsible people with excellent career prospects, good pay, lengthy vacations, responsibility, travel opportunities, and job satisfaction. On the other hand, certain peculiar aspects of life at sea can exacerbate seafarers' stress, leading to reactions that might jeopardize their physical health, psychological stability, and morale. This stress affects both seafarers on lengthy sea voyages and seafarers operating ships on inland waterways (The American Club and The Seamen's Church Institute, 2017).

Extreme stress may increase the risk of mental health problems in seafarers.

There is no evidence that seafarers have higher rates of mental health issues than the general population or people in other professions.

The World Health Organization has calculated that at any given time, roughly 20% of the adult population is dealing with a mental health issue. Additionally, there are expenses related to mental health problems.

For some seafarers, certain stressors particular to their life on ships can become acute. According to The American Club and The Seamen's Church Institute (2017), these stressors include the following.

Social.

1. Extended stretches of time spent away from friends, family, culture, and sources of professional assistance.
2. Social and linguistic differences between cultures, which can be stressful or make people feel more alone.
3. The mixed blessing and curse of social media and communications, which alert seafarers to issues at home and heighten feelings of helplessness.
4. A self-sufficient culture that might make people less willing to accept suffering or the need for assistance.

Work-related.

1. Because of the constant demands of shipboard life, it can be difficult for seafarers to maintain a healthy work-life balance and have time to unwind after a long day at sea.
2. Fewer opportunities to access resources or sources of support when confronted with undesirable behaviour like bullying, cultural inequality, or sexual harassment.

Personal.

1. A trauma that the seafarer conceals and has already experienced and brought to the ship.
2. The anxiety a master or seafarer feels when they are on their first contract and are away from home.

Extraordinary trauma.

1. Navigation under hazardous weather conditions and while at risk of sinking.
2. Handling a piracy attack or the threat of piracy.
3. A fire or other dangers to the vessel's structural integrity.
4. Discovery of death on board by injury, natural cause, suicide or homicide.
5. Be present when a crew member dies, suffers a serious illness, or passes away.
6. Mistreatment, intimidation, and harassment while traveling.

Port blockades, changes in the shipping industry and the sense of the unknown brought by COVID-19 have affected seafarers, but it is important that they are in good spirits and more stable in this difficult time. Seafarers had during the pandemic already developed skills to manage the pandemic as they were away from family and home for long periods of time and experienced additional challenges as they were asked to extend their contracts beyond the usual time spent at sea ship before the pandemic. It is therefore concluded that the sailors were forced to find ways to become "resilient" and maintain their positive psychology (Kaptan & OlgunKaptan, 2021).

Chapter 3: Methodology

The present study aims to study through the existing literature the mental health and well-being of seafarers. Elements such as mental health, factors affecting mental health of seafarers, the influence of the Covid-19 pandemic are explored below and are the objects of the study. Also, below it will be studied that the mental health of seafarers has an effect on the efficiency of ships and how this affects shipping companies. Finally, articles that suggest policies and strategies to be implemented are also investigated. In this section a systematic review was conducted. In this part, data from 25 articles relevant to the topic of the paper were analysed.

Author	Date	Title	Objectives	Conclusion
Seafarers' mentalhealth				
Sampson & Ellis	2021	Stepping up: the need for Proactive Employer Investment in Safeguarding Seafarers' Mental Health and Wellbeing	This paper contributes new data to the existing debates around seafarers' welfare and mental health by exploring stakeholder and employer attitudes and approaches to the mental health and wellbeing of seafarers working aboard deep-sea cargo vessels, alongside the views and perceptions of active seafarers themselves.	In relation to very serious mental ill-health and its manifestations (suicide and requirement for repatriation) we find that there is no clear evidence of a worsening situation among seafarers in the contemporary international cargo shipping fleet.
Seyle et al.	2018	The long-term impact of maritime piracy on seafarers' behavioral health and work decisions	Explore the rates of lasting distress in seafarers held hostage by pirates through the use of validated psychological scales, identify predictors of resilience or risk in the face of piracy to assist in the development of policies that promote effective prevention of distress.	This research finds that 25.77% of former hostages show symptoms consistent with PTSD, and that hostage experiences and other maritime traumas can have impacts on seafarer wellbeing and decisions about their career through the impact these traumas have on post-traumatic stress symptoms.
Shi et al.	2015	Early warning for human mental sub-health based on fMRI data analysis:	Proposed a human mental sub-health early warning method by utilizing two-fold support vector machine (SVM) model, where	All of the results showed that fMRI-based analysis of brain functional activities could be effectively used to

		an example from a seafarers' resting-data study	seafarers' fMRI data analysis was utilized as an example.	distinguish the mental health and sub-health status
Factors on board affecting seafarer's mental health				
Nittari et al.	2022	Factors affecting mental health of seafarers on board merchant ships: a systematic review	Merchant ships represent a peculiar working environment with several challenges and risks. The specific situation on board of ships may affect the mental health of seafarers more remarkably than ashore workers.	Strategies aimed at improving conditions of cohabitation on board, and a greater consideration of these problems are key for improving the mental health of workers at sea.
Jonglertmontree et al.	2022	Mental health problems and their related factors among seafarers: a scoping review	This review aimed to clarify beneficial approaches to the mental health problems faced among seafarers using a scoping review to systematically map the evidence regarding mental health issues and their related factors.	Promoting health behaviors, training resilience, and managing obesity and chronic diseases comprise individual level strategies. Providing seafarers with adequate instrumental support, and practical support to communicate with customers, managing their distinct work-rest hours and adequate effort-reward balance comprise organization level methods.
Sliskovic&Juranko	2019	General mental health of seafarers' partners: Testing the role of personal resources and human-resource practices	The study focuses on the explanation of the mental health of seafarers' partners, by testing the role of different individual characteristics, and the organizational characteristics of their partners' job.	The results obtained confirmed the role of personal resources and human-resource practices in the explanation of the mental health of seafarers' partners.
Tetemadze et al.	2021	Seafarers' Wellbeing or Business, a Complex Paradox of the Industry	The research is an insightful exploration into what contributes to the deterioration of seafarers' wellbeing.	Seafarers' wellbeing is unlikely to improve unless awareness of the concept of wellbeing is installed within the SMS and all of its dimensions are well addressed in future amendments of the regulatory instruments.
How Covid has impacted seafarer's mental health				
Lucas et al.	2021	Seafarers' mental health in the	Objectives of this paper are to describe seafarers' mental health	To prevent mental health disorders among seafarers, all characteristics of

		COVID-19 era: lost at sea?	and associated factors in a narrative review and in a second part to answer if in the COVID-19 era, additional damaging effects appeared.	organizations at sea, at port and in different types of vessels should be included in prevention programmes, and more research should be conducted on factors of boredom and stress among seafarers and fishermen.
Abila et al.	2022	Mental health interventions for international seafarers during the COVID-19 Pandemic: a pilot study	This report presents findings and analyse the psychosocial or mental health interventions that seafarers have experienced, as well as how these measures are perceived in the context of the ongoing pandemic.	This report provides evidence of the various types of psychosocial support or mental health interventions provided to seafarers by stakeholders including their employers, NGOs, and their peers and their families, during the COVID-19 pandemic.
Baygi et al.	2021	Prevalence and associated factors of psychosocial distress among seafarers during COVID-19 pandemic	This study aimed to assess the prevalence and associated factors of psychosocial distress among seafarers of ocean-going vessels during the current health emergency.	High prevalence of depression, anxiety, and general psychiatric disorders among seafarers during COVID-19 was observed. Findings also highlight the factors that need to be considered to protect seafarers' mental well-being.
Baygi et al.	2022	Post-traumatic stress disorder and mental health assessment of seafarers working on ocean-going vessels during the COVID-19 pandemic	This study aims to assess the effects of the current global health pandemic on life satisfaction and adverse psychological outcomes among seafarers.	The present study revealed a high prevalence of mental health problems among seafarers during the COVID-19 pandemic.
Kanaki et al.	2022	Seafarers' Health and Wellbeing during COVID-19: Lessons Learned	The study explored the potential effects of the COVID-19 restrictions on the health and well-being of seafarers with an aim to offer insight for policy recommendations.	Seafarers were affected physically (38%), mentally (53%), and financially (40%) by the pandemic.
Lopez et al.	2022	COVID-19 CONTROL MEASURES AND ITS IMPACT ON	This article compiles the recommendations and regulations on health management established for this sector, as well as the	One of the sectors most affected by the current COVID-19 pandemic has been that of sea workers.

		SEAFARERS' MENTAL HEALTH	implications of this entire process on fatigue and stress in seafarers.	The peculiarities of working on board, in a floating structure with limited possibilities of physical mobility and social relations, get worse with the pandemic restrictions and has generated both physical and mental damage among the crews.
Mittal et al.	2020	Cloud-based framework to mitigate the impact of COVID-19 on seafarers' mental health	The main contribution of this work is to present a conceptual framework for the monitoring of mental conditions of COVID-19-infected seafarers.	This framework supports the clinical care, psychiatric issue assessment, educating onboard staff, and online self-assessment of individuals as well as depressed people. It can also help to control psychiatric issues utilising individual communications with other seafarers through simple chat sessions.
Pauksztat, Andrei & Grech	2022	Effects of the COVID-19 pandemic on the mental health of seafarers: A comparison using matched samples	The purpose of this study was to investigate the impact of the COVID-19 pandemic as well as the effects of respondent and work-related characteristics on seafarers' self-reported symptoms of depression and anxiety.	Findings suggest that the impact of the COVID-19 pandemic led to a deterioration of working conditions and increased mental health risks for seafarers.
Pauksztat, Grech & Kitada	2022	The impact of the COVID-19 pandemic on seafarers' mental health and chronic fatigue: Beneficial effects of onboard peer support, external support and Internet access	The purpose of this study was to examine the effects of the COVID-19 pandemic on seafarers' mental health and chronic fatigue, and to analyze the role of potential mitigating factors, notably onboard peer support, external support and Internet quality.	Findings suggested that the impact of the pandemic increased seafarers' fatigue and mental health problems.
Stack et al.	2021	The Impacts of COVID-19 on Mental Health, Substance Use, and Overdose Concerns of People Who Use	The objective of this study was to investigate the impact of COVID-19 on the mental health, substance use, and overdose concerns among people who use drugs (PWUDs) in rural communities to explore reasons	As rural communities respond to the evolving impacts of COVID-19, there is increasing need to identify strategies to address PWUD's mental, physical, and social health needs during COVID-19.

		Drugs in Rural Communities	for changes and ways to mitigate COVID-19 impact in the future.	
Tang et al.	2022	Seafarers' mental health during the COVID-19 pandemic: An examination of current supportive measures and their perceived effectiveness	This paper aims to find out what measures have been adopted in the industry and how widely they have been experienced/received by seafarers and evaluate their effectiveness.	The findings also highlighted the importance of family, colleagues, shipping companies, and government agencies, as they are associated with the most effective support measures, namely communication with family, timely crew changes, being prioritised for vaccination, being vaccinated, and a positive and collegial atmosphere on-board. Based on the findings, recommendations are provided.
Wong	2021	Impact of the COVID-19 pandemic on the well-being of the stranded seafarers	This study examines the impact of the COVID-19 pandemic on the well-being and mental health of the seafarers who had to overstay on ships after their contracts expired, identifies topics that affect their mental distress, and recommends measures to overcome these.	Despite the guidelines provided by the shipping companies are adequate to protect the seafarers from COVID-19, their mental distress levels have been worsened under the pandemic. The crew change crisis causes anxiety and negatively impacts on their working performance; however, the repatriation expectation of the stranded seafarers is of the highest concern.
Ogbodum et al.	2022	Mental health of seafarers amidst pandemics	Examines mental health of seafarers amidst pandemics	Seafaring remains a dangerous and socially isolating occupation where work-related accidents are likely and will be potentially traumatic to mariners.
How seafarers' mental health affects performance of vessels & shipping companies'				
Lefkowitz, Slade & Redlich	2019	Rates and occupational characteristics of international seafarers with mental illness	To describe seafarers with mental illness and associated incidence rates in a large population of international seafarers.	Using objective data on a large seafaring population, our analysis highlights the important issue of mental illness in this isolated and underserved international workforce. The low observed mental illness claims rate is likely due to the high threshold for claims reporting.
Policies & Strategies that should be implemented				

Ziarati et al.	2021	PROMETHEAS Project-Mental Health Data Research Hub for Seafarers.	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 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.
Tam et al.	2021	The potential mental health effects of remote control in an autonomous maritime world	Emphasized the importance of analysing cognitive workloads of maritime crews and how increased a mental workload is associated with higher levels of ship collision risks.	Despite some beliefs, the arrival and growth of autonomous systems and drivers in the maritime sector does not mean the human element will be phased out. With the limitations of technology and an inherit distrust in autonomous systems dealing with difficult situations, full autonomy is likely to never be reached at ports or at sea.
Zhen, Wang, & Zhu	2022	A deep learning-based method for intelligent detection of seafarers' mental health condition	In this paper, a dual subjective-objective testing scheme is proposed to achieve a more effective and intelligent assessment of seafarers' mental health status.	The results showed that the assessment results of the SMHT scale exhibited good reliability and retest reliability and scale association validity. The advantages and disadvantages of the solution were compared with mental health testing techniques such as CAT, machine learning, SCL-90, and fMRI, and the method demonstrated more accurate psychological testing results, providing a simple and intelligent solution for standardized psychological testing of seafarers.

Chapter 4: Results

4.1 Seafarers' mental health

In the study by Sampson and Ellis (2021) it is pointed out that in the last decade there has been an emphasis on ensuring mental health in the global workforce. In the shipping industry, both charities and insurance companies have expressed concern about the mental health and well-being of seafarers and have proposed a combination of effective treatments and strategies to reduce the risk associated with reactions and behavior.

This study sheds new light on the existing problem of seafarers' well-being and mental health by observing the attitudes and actions of stakeholders and employers of their employees working on deep-sea cargo ships, combined with the perceptions and opinion of active sailors themselves. The study is original as it is found that there is a convergence in terms of the opinion expressed by the seafarers themselves and they believe that it would be good for their own peace of mind and well-being. Based on the evidence from the two main data sources, the paper suggests a number of practical actions that employers should consider reducing seafarers' exposure to risk factors that lead to dissatisfaction and poor mental health. These actions concern the introduction of better-quality internet for free telephone communication with seafarers' relatives, better quality food, recreational facilities, shore leave, work-to-leave ratios, bullying and harassment, furnishing, officer training and consultancy services.

Seyle et al., (2018) report that over 6000 seafarers have been held hostage in the past decade. The few studies that have dealt with this issue have shown that seafarers because of their profession may experience this very unpleasant experience and their lives may be at risk.

However, recent studies on maritime piracy have been few due to the inability to compare groups, lack of statistical power, and other methodological challenges. This study attempts to address this serious issue through a survey of 101 former hostages and 363 sailors not known to have been exposed to piracy from India, the Philippines and Ukraine. Utilizing clinically validated scales to monitor lasting effects, the research finds that 25.77% of ex-hostages experience symptoms of post-traumatic stress and that hostage experiences and other maritime traumas can negatively impact seafarers' well-being and career decisions through of the impact these traumas have on PTSD symptoms.

Research by Shi et al., (2015) points out that effective mental health early warning actions have beneficial effects in terms of protecting individual mental health.

The classic method of mental health assessment relies more on questionnaire surveys, which may have some lack of certainty. In this study, combined with the relationship of the default mode network (DMN) and mental health status, a human mental health early warning method was proposed through dual support vector machine (SVM) model, where seafarers' fMRI The data analysis was a key sample.

The method was originally constructed as a structural-functional DMN model by combining the auto-labeling anatomical model with the functional DMN extracted by independent component analysis. Then, a dual classifier based on SVM was proposed, with a one-class SVM used to train the original classifier and a two-class SVM used to improve the classification performance, to determine the mental health status of seafarers using correlation coefficients (CCs) between regions of the structural-functional DMN as the features. The experimental results show that the proposed model will be able to effectively distinguish seafarers with altered DMN function from the healthy control (HC), and further the results showed that compared to the HC group, the brain functional disorders of mentally healthy seafarers mainly manifest as follows: DMN functional connectivity had salinity evident. CCs between different DMN regions were significantly lower. Regional homogeneity decreased in parts of the prefrontal cortex and increased in many regions of the parietal, temporal, and occipital cortices. the fractional amplitude of low-frequency variation was reduced in parts of the prefrontal cortex and increased in parts of the parietal cortex. All the results concluded that fMRI-based analysis of brain functional activities could be effectively used to discriminate mental health and sub-health status.

4.2 Factors on board affecting seafarer's mental health.

By means of the investigation of Nittari et al., it was noted that merchant ships are characterized as a complex working environment that is incredibly unstable and vulnerable to risks. The mental health of seafarers may be impacted by this situation. A study conducted between January 2006 and December 2021 using the search engines PubMed, Web of Science (WoS), and Cumulative Index to Nursing and Allied Health Literature (CINAHL) was published after a thorough review of the literature to determine the causes of a ship's crew developing mental disorders as well as the effects on their lives. The primary causes of mood disorders among seafarers are social isolation, leaving the family home, burnout, stress, and long shifts. Considered a

serious issue that will aid in the improvement of the mental health of seafarers, improving living conditions on board and thorough study of these situations are both being pursued.

Jonglertmontree and others., (2022) draw attention to the fact that seafarers are routinely exposed to a dangerous environment with a high risk of experiencing severe mental shock, such as anxiety, stress, depression, and/or suicidal ideation, because of their occupation. However, compared to physical health, the condition of seafarers' mental health has not received the respect it deserves. This is due to the fact that not enough research and works have been compiled on the current issue.

Using a scoping review to systematically map data on mental health issues and related factors, this review sought to highlight helpful approaches to mental health problems faced by seafarers. On August 20, 2020, databases from MEDLINE/PubMed studies, Science Direct, Academic search comprehensive using EBSCOhost, SCOPUS, EMBASE, and Web of Science were searched. The framework developed by Arksey and O'Malley and the Preferred Data reference for the scope overview flowchart served as the foundation for this scoping review. Studies that identified critical variables related to working conditions and how they affect seafarers' mental health, among other things, were required for inclusion.

A descriptive presentation of the data followed the data's summary. To the current review, twenty-four more were added, and two major issues were clarified. Firstly, it has been known for a while that stress, depressive symptoms, and burnout are common. Second, factors that relate to psychological problems and mental health can be divided into individual and environmental work factors.

Experience, age, health status (high BMI, poor sleep, and diabetes) and resilience are the main individual factors. However, there are two sides to environmental work factors. Working hours, ship departments, job titles, voyage incidents, sailing season, noise, and vibration are some peculiar working conditions. Pressure from contractors, clients, and time is another. Organizational support, cohesiveness on the team, commitment, and an unbalanced effort-reward system are all examples of resources at work. It is deemed essential to comprehend from both an individual and organizational level a positive perspective of solutions to the issues with mental health that seafarers face. Individual-level strategies include adopting healthy

behaviors, learning resilience skills, and dealing with obesity and chronic illnesses. Methods at the organizational level include giving seafarers crucial support in terms of customer communication, appropriate adjusting of various work-rest hours, and effort-wage balancing.

Sliskovic and Juranko (2019) assert that the uniqueness of seafarers' professions in relation to their families' lives is acknowledged as a life that can be stressful and worrying for seafarers' partners. The study's main objective is to provide an explanation for why seafarers' companions have poor mental health by examining the significance of various individual traits and the organizational traits of their companions' workplaces. 539 women (aged 18 to 60) who said they were partners of sailors made up the sample. A series of scales measuring general mental health, relationship satisfaction, stress coping strategies, perceived social support, and durability were included in the online survey, along with questions about the demographics of the participants and the job characteristics of their partners. The findings revealed that, after adjusting for demographic factors, the following indicators significantly contribute to understanding the mental health of sailors' partners: resilience, relationship satisfaction, perceived social support, and use of stress coping mechanisms (a lower level of dysfunctional coping mechanisms and a higher level of emotion-focused mechanisms). Additionally, the positive working-to-non-working days ratio among seafarers contributed to our understanding of their overall mental health.

The outcomes supported the importance of individual and practical human resources in defending the mental health of seafarers' companions.

scholarly work by Tetemadze et al., (2021) takes a perceptive look at what contributes to seafarers' wellbeing declining. The main causes are discussed, along with their detrimental effects on wellbeing, and the issue's levels of perception and awareness within the maritime community are also further explored.

The effectiveness of the primary regulatory tools used to address the welfare of seafarers is also examined and discussed. Semi-structured interviews and content analysis were the foundation of the qualitative methodology used. Interviews were conducted with 26 seafarers from various nationalities working on various types of ships, one pilot, and 11 key players in the maritime industry. According to the literature review, well-being can be understood by including elements like its

physical, mental, and social dimensions and highlighting its significance in the workplace. The study demonstrates that, despite widespread knowledge of these well-being dimensions and determinants, shipowners' provision of psychosocial working conditions on board their vessels falls short of the ideal conception of well-being. Shipping companies also display a weakness in improving education, training, and awareness of mental health and wellbeing issues on ships and how to handle them, as the current safety management system is restricted to incident and accident reduction standards. The findings point to serious causes of fatigue that have a detrimental impact on the wellbeing of seafarers, including an excessive workload and a lack of sleep (as a result of reduced manning). Long contracts, a lack of vacation time, a lack of internet access, a lack of socializing on board, worry about losing one's job, and stress/anxiety are some other things that have been noted. The MLC 2006 regulatory instrument outlines the fundamental rights of seafarers, but it is inaccurate in its assessment of their state of welfare. If it is not recognized as a concept, its significance for seafarers' lives is not emphasized in the SMS, and all of its dimensions are not taken into consideration in future amendments to the regulatory acts, the well-being of seafarers will not be able to increase.

4.3 How Covid has impacted seafarer's mental health.

In another research, Lucas et al., (2021) emphasize that seafarers are vulnerable to physical and psychosocial stressful risks. Recent studies have pointed to specific disorders such as fatigue, boredom and illnesses such as depression. Seafarers are also at risk of experiencing post-traumatic stress (piracy, accidents, threats). Because the outbreak of the pandemic has affected maritime transport and a very large number of seafarers who, due to their prolonged stay on ships all over the world, given the risk of increasing unemployment.

It is known that the International Maritime Organization has set up a Task Force on the general crisis due to the pandemic in order to solve this problem. In France, in the last 10 months, a dedicated call center received 142 calls from 32 sailors for psychological telephone consultations particularly associated with this era. Thus, it is

imperative to provide psychological care, repatriation and financial solutions for seafarers.

As reported by Abila et al., (2022) the emergence of the COVID-19 pandemic has raised concerns about the vital role of the shipping sector in the global supply chain. This new situation created a crisis both on a human level and in terms of security. This led to the closure of borders, the implementation of strict quarantine measures and an instability in the vaccination campaign. In earlier times the issue of the mental health of seafarers was at the center of concern for their well-being and safety at sea. However, today due to global travel restrictions there are 400,000 stranded seafarers and dock workers facing physical and mental exhaustion and in urgent need of repatriation to their home countries. For these reasons the shipping industry and a number of global organizations such as the International Maritime Organization as well as various NGOs have shown interest in contributing to the recovery of seafarers' mental health through psychosocial support and formal crisis intervention with the main aim of mental well-being through preventive actions / or the prevention or treatment of mental disorder", as they typically state.

The various measures that are available to seafarers and the methods they believe will work the best and improve their mental health haven't been sufficiently evaluated, though, on both counts. The purpose of the current study was to explore these issues. The analysis of the mental health of seafarers in relation to their various treatments and how these measures are viewed in the context of the pandemic is presented in this report along with some key findings. This study by Baygi et al. (2021). comes in the context of increased worries about the detrimental effects of seafarers' mental health caused by the COVID-19 pandemic.

Assessing the prevalence of psychosocial distress among seafarers and its contributing factors was the goal of ocean-going vessels brings up crucial points for discussion. 470 international seafarers employed by two oil-based international shipping companies participated in this psychosocial survey.

The Depression, Anxiety, and Stress Scale (DASS-21) was used to measure dissatisfaction. The Zung Self-Rating Anxiety Scale (SAS) and the General Health Questionnaire-12 (GHQ-12) were used to measure general psychiatric disorders and self-rated anxiety. A single-item question was used to evaluate perceived health status.

To ascertain the relationship between demographic and employment-related factors and outcomes related to mental health, multivariate logistic regression was used. A total of 439 of the 470 invited seafarers with a mean age of 34.5 (SD: 8.05) and a participation rate of 93.4 percent took part in the study. In the multivariate model, the odds of depression increased by 20% as the length of stay (per month) on board increased. Additionally, compared to officers, non-commissioned seamen actually experienced less psychosocial distress, such as stress and anxiety.

To come to a more definitive conclusion regarding the effect of COVID-19 on maritime psychological health issues, it is necessary to observe additional studies.

"Baygi et al.". (2022) emphasize that more people are thinking about this issue. Thus, the study will attempt to assess the detrimental effects of the current pandemic on seafarers' health, sense of fulfillment in life, and psychophysical changes. 470 international seafarers employed by two different international shipping companies were assessed as a result. The Patient Health Questionnaire (PHQ-9) with a depressive severity score was used to evaluate mental health outcomes along with the General Anxiety Disorder Questionnaire (GAD-7), the Posttraumatic Stress Disorder Questionnaire (PTSD-8), and the General Anxiety Disorder Questionnaire. Estimating the relationship between sociodemographic and employment-related factors and outcomes related to mental health.

The study's participation rate was 93.4% with a total of 439 out of the 470 seafarers who agreed to participate, with a mean age of 34.5" (SD: 8.5") years.

Anxiety, depression, and post-traumatic stress symptoms were common, with prevalence rates of 12.4, 14.1, and 37.3 percent, respectively.

The length of current vessel sealing was directly related to the likelihood of depressive symptoms and invasion in the multivariable model. At the same time, hypervigilance and avoidance had an inverse relationship with the number of hours worked per week. Additionally, non-officers demonstrated significantly less avoidance, hypervigilance, and anxiety and depression symptoms than did officers.

The COVID-19 pandemic has also seen a high prevalence of mental health issues among seafarers. In fact, more information is required on the psychosocial health problems that may arise for this at-risk profession.

Kanaki, Bygvraa, and Charalambous (2022) assert that the shipping industry's significance on an economic and social level is obvious given that it accounts

for the majority of global trade in goods. There have been ups and downs in the shipping industry since the implementation of COVID-19, though. States were compelled to implement stringent preventative measures. The No Sail Order with its port closures and movement restrictions served as an illustrative example. In order to offer helpful information and policy recommendations, the study examined the degree to which COVID-19 restrictions had an adverse effect on the health and wellbeing of seafarers. The study by Stack et al., was to investigate in-depth causes for changes and strategies to lessen the effects of COVID-19 in the future by looking at how COVID-19 affects people who use drugs (PWUDs) in rural communities' mental health, substance use, and overdose concerns. PWUDs were interviewed in 5 rural counties in Oregon with high overdose rates using a semi-structured interviewing format. Through participant-driven sampling, text and leaflet advertisements, and promotional materials, participants were located (n = 36).

The COVID-19 had some effects on substance use, according to the participants. Overall, participants who used methamphetamine exclusively reported less use than those who used heroin exclusively or combined methamphetamine and heroin. Despite increases in risky use and suicidal ideation, the majority of participants claimed that they were not concerned about overdosing and that COVID-19 did not make them more so. Adopting the right strategies to address the mental, physical, and social health needs of PWUD during COVID-19 is crucial as rural communities adapt to the changing impacts of the epidemic.

Wang et al., (2022) note that a variety of shipping agencies have stepped up to offer a range of supportive measures to address the issue as the COVID-19 pandemic and subsequent crew turnover crisis prolong the mental health problems faced by seafarers. In order to evaluate the effectiveness of the measures that have been put into place in the industry, it is important to know how well-accepted or helpful they have been to seafarers. In order to achieve this, this study employed a mixed-methods approach that included quantitative questionnaire surveys of 817 seafarers and qualitative interviews with 26 stakeholders.

A total of 22 mental health support measures were gathered for the survey, and all of them were thought to improve the mental health of seafarers. However, not all of them were accessible to or used by sailors. In relation to the most efficient support measures, i.e. timely crew changes, regular family communication, vaccination as a

priority, and a team environment on board. Recommendations are given in light of the findings.

In her study from 2021, Wong looks at how the COVID-19 pandemic has affected the well-being and mental health of seafarers who have to stay on board ships after their contracts expire. She also identifies the problems that are contributing to their mental unhappiness and offers solutions (Wong, 2021)

Regarding the effects on seafarers both before and during the COVID-19 pandemic, four research questions were posed for the study's purposes. To get the information, a review of the literature and a questionnaire survey were carried out. In order to quickly gather enough samples for this study, the ship's officers were asked to assess and complete questionnaires for the stranded crew members on board. Even though the guidelines provided by shipping companies are sufficient to protect seafarers from COVID-19, the pandemic has increased their levels of mental distress. They perform poorly at work as a result of the crew change crisis, which increases stress. The desire for the stranded sailors to get home soon, however, is of the utmost importance. Crew turnover crisis, low vaccination rate, and underappreciation of essential workers were all found to have an effect on the mental health of stranded seafarers. Shipping companies and seafarers are required to carry out their duties in these conditions, which has an adverse effect on mental health and causes burnout while they try in any way they can to survive after the pandemic. This is true even though international stakeholders are lobbying for support on these issues. The results of this study will assist shipping firms in resolving current issues and seafarers in navigating the psycho-emotional changes brought on by the COVID-19 pandemic.

Ogbodum and co., (2022) emphasize that despite the fact that it affects businesses and people all over the world, mental health is a crucial issue that has not yet received the attention it requires. Many risks confronted by seafarers can disturb their sense of calm. However, seafarers have few options for escaping stress and anxiety. On ships with extended holidays, they are typically hired for 6 to 8 months and work typical 10- to 12-hour shifts for many days without a break.

Research on the mental health of seafarers by profession was conducted prior to the COVID-19 outbreak and found significant rates of depression, anxiety, and suicidality among the general population. But since the pandemic,

these issues have gotten worse and the shipping industry is now dealing with brand-new issues (Ogbodum and co., 2022)

According to numerous studies, certain limitations brought on by the COVID-19 pandemic may cause stress levels to rise more than they did in the years prior to the health crisis. For instance, all the measures taken to contain the virus, such as travel restrictions and border closures, have had a negative impact on crew changes and led to seafarers staying at sea. Because they were not permitted to disembark at the ports and travel back to their home country, some sailors were compelled to spend several weeks aboard cruise ships. Furthermore, a sizable portion of seafarers have yet to receive their pay. Nearly 60% of the 400,000 prisoners of war on board the ships have already voiced their displeasure with the inadequate measures pertaining to their own category and situation there. Numerous sailors suffered from severe anxiety, social isolation, and stress, which affected their mental health and, in some cases, resulted in suicides. (Wong, 2021)

Obtaining permission from the land at the ports was an impractical endeavor in many nations. Due to the need for some maintenance and repairs to be performed outside of the ship, the already challenging situation became more challenging. It was also very challenging to find a doctor. The possibility of infection, feelings of insecurity, and concern for the welfare of family and friends added to the stress experienced by seafarers. The pandemic is having an impact on other workers' ability to function at work as well as in their personal lives, according to data from other occupational categories. Rates of mental shock, such as post-traumatic stress disorder, have increased. Unpleasant incidents experienced by seafarers such as piracy, accidents, threats, and disasters should undoubtedly be added to this list. My conclusion is that because sailors spend so much time away from their families and social networks, their profession entails a variety of dangers. Global stakeholders have vehemently demanded that something change in this regard, noting the significance of classifying seafarers as "key workers," in the same category as medical professionals or other workers whose line of work has an impact on the general public's well-being, in recognition of the impact of COVID-19. (Wong, 2021)

This will exacerbate a number of problems. They are permitted to use "secure corridors" in airports because of their status as key workers, just like when they fly to get to a specific port. Due to the paucity of studies on the effects of seafarers' mental health in this field, it is deemed necessary to conduct additional research as well as to identify

practical solutions in tandem with grants to comprehend seafarers' mental health in situations like the recent pandemic (Wong, 2021)

4.4 Highlighting the occurrence of rates of mental illness in sailors of different ranks.

In their research, Lefkowitz, Slade and Redlich (2019) argue that seafarers contribute to 90% of global trade, working in limited conditions without access to some form of social support and medical care. In addition, this peculiar profession is capable of damaging mental health through depression and even suicidal tendencies, and studies on this issue are disappointingly few. The aim of the study was to report on a large category of seafarers with mental illness and to highlight the relative incidence rates in seafarers of different ranks. Mental illness claims data from a major international marine insurance provider collected from working seafarers over the period 2007-2015 were utilized. Descriptive statistics were used while estimating rates of mental illness in this seafarer population. As a result, 278 seafarers' claims of mental illness were collected in the study data. Claims were most often reported to deckhands (46%) and ratings (58%). The crude mental illness rate was 3.9 per 100,000 person-years. In conclusion using universal data for a large seafaring population, the said analysis highlights the significant issue of mental illness in this isolated and underserved international workforce. The low observed rate of mental illness claims may be due to the high threshold for reporting claims (Lefkowitz, et al.,2019)

4.5 Policies & Strategies that should be implemented.

Many accidents and serious incidents have been caused by fatigue. Although bullying is one of the PROMITHEUS project's study topics, more research will be done on it in the future to determine why its causes and effects should be studied. The article offers a variety of doable strategies for improving mental health and comprehending how drug therapies work. The main goal of this work is to gather a variety of data on seafarers' mental health and develop a data hub on that topic so that policymakers can use that data to establish new rules and regulations to promote mental health at sea. One last idea is to use the research to develop an online course on mental health and wellness for seafarers, with a section just for captains and

shipping firms. The process will be beneficial because it will evaluate specific intervention measures and then make corresponding policy recommendations based on this evidence. A mixed-methods approach was used in the study to first identify the precise psychosocial or mental health interventions offered to seafarers through qualitative in-depth interviews with a range of important stakeholders (Wong, 2021)

The list was used as a jumping-off point for creating an online survey. Beginning in early July 2021 and running through mid-September 2021, the final questionnaire was made available online for two and a half months in each of the following four languages: English, Chinese, Tagalog, and Japanese. 26 respondents from various states participated in the in-depth interview, which was conducted. Seafarers provided 1,412 responses to the online survey. The average age of the respondents was 30 years, and 96.2% of them were men. The majority of respondents (66.9%) were male. Only 19% of respondents have open-ended contracts, and 91% of seafarers have short-term contracts lasting 10 months or less. 22 different types of support were documented by the in-depth interviews. These were divided into two groups: support provided by businesses and support provided by other stakeholders (such as one's own self, family, shipmates, charities or NGOs, and the government). (Lefkowitz, et al., 2019)

The online survey's findings demonstrate that:

The 22 different kinds of psychosocial support were all viewed favorably by seafarers.

1. The most frequently used company interventions included crew change and COVID-19 updates (72%), facilitating prompt crew changes (57%), and offering sufficient and high-quality personal protective equipment (PPE) (53%).
2. The least preferred company interventions were increases in leisure benefits (26.2 percent) and family support benefits (21.9 percent).
3. The strengthening of a positive climate on board (76.7%), physical activity (70.4%), situational counseling among crew members (70.3%), and group recreational activities (67.3%) were the most fundamental psychosocial supports provided by other stakeholders.
4. Of the psychosocial interventions made available by additional stakeholders, meditation (30.5%) and vaccination (30.1%) were the least applied techniques.

5. Overall, only 30.1 percent of all respondents had received a vaccination at the time of sampling.

Filipinos, who made up the largest proportion of respondents, had a lower vaccination rate than Chinese people (81.6% vs.23.7%).

1. Of the preventive measures implemented by businesses, prompt crew changes (79% of respondents rated them as effective), immediate family support (67% rated them as effective), increasing the Wi-Fi data allowance (63% rated it as effective), and providing adequate and high-quality PPE (63% rated it as effective) were rated as the most helpful to seafarers.
2. Family communication (87.7%), vaccination priority (77.6%), vaccination (74.1%), and a positive, cooperative atmosphere on board (73.7%) were the interventions that seafarers felt had the greatest positive impact and provided to other stakeholders.
3. The findings show how important family is to a significant portion of seafarers.
4. The company's assistance to the seafarer's family through a satisfactory data provision and telephone conversation to facilitate communication is hailed as being extremely beneficial for the mental health and well-being of seafarers.

The following recommendations are made to the companies as a result of using a support-impact framework from the study to assist the primary interested shipping entities in determining the priority of interventions. Strengthening measures to promote the mental health and wellbeing of seafarers on board, such as peer counseling, videos, books, or other resources for stress relief. The freedom to tailor programs to the demands of seafarers in times of emergency. Put more of an emphasis on "enabling prompt crew changes," "providing immediate family support," "increasing Wi-Fi data allowance," and "minimizing overtime." Providing seafarers with access to sufficient, high-quality PPE and encouraging them to contribute to a safe working and living environment.

Tam along with others., (2021) highlight how a variety of maritime activities, including loading, unloading, and transporting cargo, primarily involve prolonged periods of low pressure, with brief spikes in pressure during difficult maneuvers or unpredictable, perilous incidents. In order to cut costs and lower the likelihood of human error, machines and artificial intelligence are

beginning to step in and take over certain responsibilities and tasks in the shipping industry. These kinds of solutions can only eliminate the majority of the work associated with low-pressure periods, given the state of technology development, legislation, and public trust in it today. In fact, there are still a number of remote-control tasks that must be carried out by human operators to deal with complex circumstances that AI still doesn't fully understand. It is a fact that the eventual interaction between humans and machines could put human life in danger. The worry is that if a human user spends a lot of time performing a variety of unrelated, stressful tasks without any breaks to reduce stress, this could compromise their mental and physical well-being.

The goal of this study is to draw attention to potential technical, social, and psychological problems that might develop as the maritime industry starts to use partially and fully autonomous operations (Tam et al., 2021). According to Zhen, Wang, and Zhu (2022), ensuring the orderly growth of the ocean shipping industry requires regular monitoring of seafarers' mental health. In order to achieve a more accurate and insightful evaluation of seafarers' mental health status, a dual subjective-objective testing system is suggested in this paper. First, a revised version of the Seamen's Mental Health Test (SMHT) is created using fuzzy factor analysis, and test results from 283 seamen are analyzed using SPSS version 24. Second, this paper suggests an intelligent framework module for immersive subjective emotion extraction based on natural language processing, namely Semantic Summary (SSE), Speech Emotion Extraction (SEE), using hybrid scoring mechanisms to obtain semantic and emotion matching rates and aid the seaman's mental health scale in obtaining the final correction score.

According to the data, the SMHT scale's assessment results demonstrated good reliability and scale correlation validity. In addition, compared to the conventional mental health scale, the subject-item dual test method's calibration rate increased by about 12 point 5%.

Finally, the pros and cons of this approach were weighed against those of mental health testing methods like the CAT, machine learning, SCL-90, and fMRI, and the method demonstrated more accurate psychological test results, offering a straightforward and clever solution for seafarers' standardized psychological tests (Zhen, Wang, and Zhu 2022).

Conclusions

The conclusions from the above work are that the physical and mental fatigue of seafarers on board is treatable. The seafaring profession is particularly demanding and the adversities in terms of its nature are many since the seafarer is faced with stressful and stressful situations and has the obligation to cope efficiently. The pressure to get the job done faster and the environmental conditions under which the seafarer works are a challenge for him. However, each seafarer individually has the possibility to leave the least possible exhausted and suffering from each of his trips if he practices on a mental and physical level, reshaping his thinking around certain negative emotions that cause harmful behaviors to him, the crew and also to the property of the shipowner. The rapid development of entrepreneurship and the fast pace of everyday life require the study of the Occupational Insecurity felt by the employee. Job Insecurity is a concept related to the way it affects the individual's personal and work life, while it is still being examined in detail, the way job insecurity affects the relationship between the employee's Sense of Responsibility and Control and the type of behavior that the employee exercises. A seafarer's physical condition should be at a good or satisfactory level to be able to cope with the difficult working conditions on a ship. In conclusion, it must be understood that even any form of physical activity is better than none and that small changes will bring big ones. Physical activity is the only free medicine with so many beneficial effects on health. A healthy lifestyle, of which a healthy diet is an integral part, provides a stable, elevated mood, without sharp fluctuations and transitions that can lead to depression. Many seafarers self-administer nutritional supplements or medications without the company's doctor being informed because seafarers may assume it is a trivial thing to say which should not be done. The doctor should be aware of all the substances that the workers receive on the ship and in the time they are outside of it so that in case he needs to administer drugs, he knows how they will interact with them. In addition, with sufficient sleep and the observance of a rest schedule without many procrastinations, the correct diet, the necessary supplements and perhaps medicines that are recommended to be taken by each seafarer individually to strengthen his body, he will be able to face the demands of the profession more efficiently. Finally, the role of the master and the company is paramount in educating the crew to know how to protect themselves and to provide support and assistance in every possible way.

Obviously, maritime work is done both on land and at sea while a ship is traveling between ports, as well as while a ship is docked in a port for maintenance, repairs, refuelling, etc. The primary distinction of the maritime industry can be summed up by the fact that the ship, as a workplace, is constantly in motion, traveling through the sea from one point of the world to another rather than remaining fixed in one location. Naturally, he makes a brief stop at the port for the reasons we mentioned above before continuing on to the next port. This constant movement of the ship in the water brings with it a number of hazards and dangers, such as choppy waters and big waves, frequent and quick changes in the weather, etc. All of these have a bad impact on the ship, the cargo it transports, the working crew, and the ship itself. Even on the most advanced ships with some amenities, life on board is generally regarded as monotonous and boring. The management of the ship and its safe operation, as well as the handling of challenging or even dangerous situations that typically arise during the voyage, call for a great deal of responsibility from all crew members. Modern ships clearly make an effort to make the areas where sailors typically live and work more aesthetically pleasing and user-friendly. They also have various amenities for the sailors' enjoyment, including a library, sports area, swimming pool, movie projectors, board games and other games, music, etc.

Additionally, nearly all ships are equipped with cutting-edge communication tools that allow sailors to stay in touch with their loved ones while also handling other matters that may interest or concern them. These tools allow sailors to communicate with anyone they choose as well as with their family and the general public. It is important to note that even though the seaman may frequently travel very far and for an extended period of time to see his family, his obligations and responsibility do not diminish in this situation. Therefore, maintaining and pursuing contact with his family at all times and through all means is crucial and imperative. The constant movement of the ship also affords the navy the chance and ability to visit numerous ports and locations, allowing them to meet new people and learn about their cultures, technologies, sights, etc.

All of these, in the following ways, increase his knowledge, introduce fresh stimuli and ideas, and lift his spirits. But despite acting seemingly consciously or even instinctively, the sailor still exhibits a strong propensity to flee and seek solace in his social circle and family. But for the sailor's human nature, as well as for his own

people who wait for him on land and put up with his absence from home, this is not only normal but essential. The temporary interruption of the seafarer's work on the ship, followed by his return to his family environment after a reasonable amount of time, is therefore crucial and required, particularly in the modern era where both the professional responsibilities and the harmonious management of the family require greater care and more complex roles.

As a result, the seafarer "disembarking" is given the chance to give himself the necessary rest, facilitating his easy reintegration and adaptation to land society and, in the end, enabling him to mentally and physically get ready for the next "sea adventure."

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