

# **COVID-19 CONTROL MEASURES AND ITS IMPACT ON SEAFARERS' MENTAL HEALTH**

## **MARÍA-NATIVIDAD LÓPEZ-LÓPEZ**

Department of Nautical Sciences and Marine Engineering, Higher Technical College of Nautical Sciences and Marine Engineering, University of A Coruña, Spain

[natividad.lopezl@udc.es](mailto:natividad.lopezl@udc.es)

## **ROSA MARY DE LA CAMPA PORTELA**

Department of Nautical Sciences and Marine Engineering, Higher Technical College of Nautical Sciences and Marine Engineering, University of A Coruña, Spain

[rosa.mary.campa@udc.es](mailto:rosa.mary.campa@udc.es)

Orcid: 0000-0002-2770-4302

## **MARÍA DE LOS ÁNGELES BOUZA PREGO**

Department of Preventive Medicine and Public Health, Higher Technical College of Nautical Sciences and Marine Engineering, University of A Coruña, Spain

[maria.prego@udc.es](mailto:maria.prego@udc.es)

Orcid: 0000-0003-4698-2401

## **JAVIER RAMÓN SÁNCHEZ GIRÓN**

Department of Nautical Sciences and Marine Engineering, Higher Technical College of Nautical Sciences and Marine Engineering, University of A Coruña, Spain

[javier.sanchez5@udc.es](mailto:javier.sanchez5@udc.es)

### **Keywords**

COVID-19, regulations, health, fatigue, stress.

### **Abstract**

The appearance of COVID-19 in maritime transport has been an exceptional challenge for all stakeholders in this sector, mainly for seafarers who have been caught between the need to keep supply chains operational and the limitations imposed by administrations to prevent the spread of the virus. With these objectives in mind, international institutions and organizations have developed a long series of regulations that have emerged in parallel with the measures established to control the pandemic. This article compiles the

recommendations and regulations on health management established for this sector, as well as the implications of this entire process on fatigue and stress in seafarers.

Issues such as difficulties experienced in crew changes and repatriation, extended working hours, social isolation caused by mobility limitations in ports, limited medical equipment and services available, health care restrictions in some ports, the need to quarantine, and the possibility of being infected have been reported, among others, as causes of increased fatigue and stress among seafarers, as well as an upturn in anxiety, depression and other psychiatric disorders in this group.

Thus, despite the efforts of the international maritime community to regulate the problematic areas related to the outbreak of the pandemic with the aim of keeping seafarers free of coronavirus and facilitating the continuity of maritime transport, its levels of fatigue and stress have increased notably, demonstrating that these efforts have neither been sufficient nor effective regulations have been developed that specifically take into account how COVID-19 and actions aimed at the continuity of maritime transport have affected and may continue to affect seafarers' mental health.

## 1 INTRODUCTION

Given the undoubted international status of maritime transport, currently responsible for the movement of approximately 80% of world trade by volume, seafarers have historically been described as contributors of diseases transmission. However, as indicated by Pougnet et al. <sup>(1)</sup> this time, COVID-19 has developed apart from them. Thus, in the first months of expansion of the pandemic, those seafarers who were sailing could eventually be considered *free* of coronavirus thanks to the usual isolation conditions suffered by workers in this sector.

Unfortunately, this was not the case for workers in the large cruise ships sector, since from the beginning of the pandemic it became clear that these type of ships, with more than 3,000 passengers and 1,000 crew members on board, were an important source for the spread of the disease <sup>(2)</sup>. We can cite as an example the case of the *Diamond Princess* Cruise Ship, the first reported case with coronavirus patients on board, which was quarantined on February 3, 2020 upon arrival in Yokohama. After a month of confinement, more than 700 tested positive and 14 deaths from coronavirus were reported on board <sup>(3,4)</sup>. This was followed by the *Zaandam*, the *Celebriti Apex*, and up to 25 other cases reported to date <sup>(2,5)</sup>.

The lapse in the reporting of COVID-19 cases between passenger ships and other vessels, mainly cargo and fishing ones, seemed to reinforce the idea that the number of cases on board these later ships was lower <sup>(6)</sup>. However, time has shown that seafarers have been one of the most damaged sectors by the disease, suffering in particular from the restrictions imposed at the international level aimed at containing the spread of the pandemic.

The measures to counteract the pandemic have had a direct effect on the economy, the production of goods and services and its consumption, and the labour market. The quarantine measures adopted by the states and the disruption of the commercial sector, the closure of education centres and the mobility restrictions have had a dramatic effect on workers and companies <sup>(7)</sup>.

In this regard, the dichotomy generated by, on the one hand, the need to keep the international maritime transport of goods operational, guaranteeing the supply of food and basic consumer goods and, on the other hand, the necessary establishment of measures to restrict the mobility of workers to international level in order to contain the spread of the disease, resulted in a serious problem for the nearly two million seafarers who work on merchant ships and who are essential to guarantee the continuity of the supply chain.

The enrolled sailors saw their campaigns prolonged beyond what was legally required and what was physically and mentally healthy. These workers, who are highly vulnerable to the spread of the disease once it enters their workplace, have had to do an extra effort to maintain the operational safety of ships and ensuring their own health while facing with a large number of problems derived from the control measures adopted by the institutions, such as: difficulties to go ashore at the loading/unloading ports, quarantine periods and even closures of some ports, difficulties in changing crews and repatriations due to border closures, cancellation of ongoing training, difficulties in logistical support for ships, and restrictions on the renewal of certificates and licenses <sup>(8, 9)</sup>.

Also sailors awaiting embarkation had no better luck, seeing their jobs endangered by not being able to travel to the ports of embarkation and their income cut due to the subsequent delay in crew changes.

Added to this, the fear of contracting the disease and the limited access of crew members to medical supplies and services, several studies confirmed the increase in cases of depression, anxiety, stress and other psychiatric disorders among seafarers <sup>(9, 10)</sup>.

Thus, due to the evolution of the international health crisis generated by COVID-19 and the aforementioned consequences for the physical and mental health of seafarers, it is necessary:

- To take measures at the sanitary level to reduce the risk of transmission and to control outbreaks
- To carry out a more exhaustive health control of embarked workers
- To vaccinate seafarers to prevent the spread of the disease internationally
- To control and treat the stress and fatigue generated in seafarers by this situation.

To this effect, and despite the existence of basic regulations regarding medical examinations, action protocols at the arrival and departure of ships, and everything related to the sanitary issues of ships, the organizations and administrations responsible for the safety of navigation have had to urgently develop and implement a series of measures that come to update existing regulations in order to adapt to the new situation and new challenges as they arise. To this end, International Maritime Organization (IMO) created the *Seafarer Crisis Action Team* (SCAT), which brings representatives of Governments, Unions and NGOs into contact with seafarers. This group works in collaboration with the International Labor Organization (ILO), the International Transport Workers Federation (ITF) and the International Chamber of Shipping (ICS).

This article analyses the different measures proposed by the different international institutions to try to mitigate as far as possible the dramatic situation in which seafarers found themselves at the beginning of the pandemic and in some cases still find themselves. To do this, the article compiles the regulations in force and the changes introduced in them in relation to:

- Health control: including risk management measures, control of outbreaks on board,

- medical care, pre-boarding medical examinations and issuance of certificates
- Change of crews and repatriation
- Vaccination

Likewise, given the reported consequences for the mental health of seafarers, special mention will be made of the fatigue and stress suffered by this group during the pandemic.

## **2 HEALTH CONTROL**

Although carrying out periodic medical examinations and issuing the corresponding certificates is the best known health management and control tool, there are other related actions such as risk management measures, medical assistance, whether face-to-face or telematics, the management of outbreaks through quarantine or the repatriation of patients.

In this section the regulatory changes caused by the COVID-19 pandemic in relation to these issues are presented.

### **2.1 Medical examinations**

According to ILO <sup>(11)</sup>, the obligation to pass a medical examination as a requirement to embark was introduced for the first time through the application of C073 - Medical Examination (Seafarers) Convention in 1946. Later ILO adopted Convention No. 16 on the medical examination of young persons (sea) in 1921.

Today, the previous instruments have been merged into ILO Maritime Labour Convention (MLC 2006), by which the legal regime of most countries, those that ratified the Convention, ensure that all seafarers hold a valid medical certificate.

Also, IMO Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW), as amended, provides that all seafarers holding a certificate issued under the provisions of ILO MLC 2006 should also hold a valid medical certificate issued in compliance with Regulation I/9 and section A1/9 of STCW.

Due to the health emergency, Circular Letter No.4204/Add.5 (2 April 2020)– Guidance relating to the certification of Seafarers and fishing vessel personnel, was published to encourage Administrations to take a pragmatic and practical approach with regard to the extension of certificates, including medical certificates, and endorsements, and to notify ships, seafarers and relevant Administrations accordingly.

Later, on 22 April 2020, the more specific Circular Letter No.4204/Add.10 - Joint Statement IMO-WHO-ILO on medical certificates of seafarers, ship sanitation certificates and medical care of seafarers in the context of the COVID-19 pandemic, was addressed to Member States and international organizations.

### **2.2 Risk management and control**

Since ships are closed workplaces, there is a high risk of transmission once a positive case comes into contact with the crew <sup>(4, 9)</sup>. It is therefore essential to ensure that seafarers enrol in the best health conditions and that these conditions are maintained throughout the entire campaign. The first is achieved by carrying out the mandatory diagnostic tests,

although, unfortunately, the results obtained have an error rate, so in many cases a period of preventive quarantine is also imposed prior to the ship's departure. The second depends on the variety of preventive measures adopted and the severity when following them by the crew, in order for them to be effective.

In addition, in the event that, despite the precautions taken, a positive case is diagnosed on board, it will also be necessary for the crew to have clear instructions on how to proceed to prevent the transmission.

For this purpose, on August 25, 2020, World Health Organization (WHO) developed the guideline Promoting public health measures in response to COVID-19 on cargo ships and fishing vessels: interim guidance <sup>(12)</sup>. This guideline was updated and published on December 23, 2021, under the title: An implementation guide for the management of COVID-19 on board cargo ships and fishing vessels <sup>(13)</sup>.

WHO is aware that sea workers on cargo, passenger and fishing ships faced, and are facing, the pandemic with added difficulties that worsen since close contacts are very frequent in their workplace.

These guidelines take into account various factors such as: the lack of a doctor on board, the specific prevention plans against COVID-19 and the lack of specific Personal Protective Equipment (PPE) in use, the possible lack of guidelines on environmental hygiene and that the Public Health safety measures for ships and ports are different from country to country.

Other aspects included in the guidelines are the risk analysis on board ships- identifying four areas and categories of procedures on each ship, preventive measures, environmental hygiene measures and how to manage the suspected cases of COVID-19.

Also, in March 2020, the ICS published by the first time guidance to help the international shipping industry mitigate the spread of COVID-19. The document, nowadays in its fourth edition, contains advice on how to manage port entry restrictions and offers practical coronavirus protection measures for seafarers. The information provided includes, among other topics: port entry restrictions, pre-boarding information and screening, education, and what to do in suspected cases of infection. Clear advice is also provided on hygiene measures on board, risk exposure management, case management, isolation, cleaning, disinfection and waste management <sup>(14)</sup>. The current version of the document <sup>(15)</sup>, also contains a PCR testing procedures Matrix, vaccination information and measures to enhance mental health and wellbeing.

Meanwhile, IMO published a series of circular letters to guide seafarers in the necessary measures to reduce the risks of transmission on board:

- Circular Letter No.4204 (31 January 2020) aims to provide information and guidance, based on recommendations developed by the World Health Organization (WHO), on the precautions to be taken to minimize risks to seafarers, passengers and others on board ships from novel coronavirus.
- Circular Letter No.4204/Add.3 (2 March 2020) on Operational considerations for managing COVID-19 cases/outbreak on board ships.
- Circular Letter No. 4204/Add.15 (6 May 2020) provides World Health Organization (WHO) information and guidance on the safe and effective use of personal protective equipment
- Circular Letter No. 4204/Add.25 (24 July 2020) – Outcome of surveys by ICS and ITF on health protection measures on board ships in response to the coronavirus (COVID-19) pandemic.

- Circular Letter No. 4204/Add.27 (26 August 2020) - Protocols to mitigate the risks of cases on board ships.
- Circular Letter No. 4204/Add.28 (26 August 2020) guidance on Promoting public health measures in response to COVID-19 on cargo ships and fishing vessels, prepared by WHO.
- Circular Letter No. 4204/Add.34 (19 November 2020) WHO e-learning courses on *Promoting public health measures in response to COVID-19 on cargo ships and fishing vessels* and *Operational considerations for managing COVID-19 cases and outbreaks on board ships*

Another important source of infection is the shipboard interface between seafarers and shore-based personnel during port calls.

Reducing interaction between ship personnel and shore-based personnel to the minimum necessary to maintain ship's safe operation is essential, as pointed out by Sossai et al. <sup>(16)</sup> and Stannard <sup>(6)</sup>, and in cases where this interaction cannot be eliminated, a safety distance must be maintained, as well as the prescribed hygiene measures.

Taking into account the potential risk of transmission between ship personnel and shore personnel, IMO published the Circular Letter No. 4204/Add.16 (May 6, 2020) COVID-19 related guidelines for ensuring a safe shipboard interface between ship and shore-based personnel.

### 2.3 Medical care and quarantine

In general, as indicated by Sossai et al. <sup>(16)</sup>, the medical equipment on board is limited to a sphygmomanometer, a stethoscope and a thermometer, which makes it impossible to evaluate essential vital signs in the diagnosis of coronavirus, such as oxygen saturation, or performing an electrocardiogram.

Additionally, taking into account that most cargo ships do not have specialized health personnel on board<sup>(3)</sup>, external medical advice is required when the personnel responsible for health issues on board have doubts on the diagnosis of the patient or when, despite the prevention and control measures for outbreaks, the positive cases are so serious that it is difficult or impossible to treat the patients with the means available on board.

Although, as Stannard <sup>(6)</sup> indicates, early diagnosis and close monitoring of positive cases are key to successful management of the disease, it is also true that rapid access to oxygen and more advanced medical care and health resources than those available on a ship are vital to seafarers.

The most realistic option available for seafarers is to obtain medical care from shore-based services. It is, specifically, the Radio Medical Service <sup>(3, 4)</sup>, from where a first diagnosis, recommendation on treatment and follow-up of the patient are made.

In the particular case of COVID-19 pandemic, the support provided by the Radio Medical Services is mainly related to the diagnosis of COVID-19 against the common flu, isolation methods on board and evacuation methods <sup>(16)</sup>. Likewise, in 2020 the number of radio medical consultations related to symptoms compatible with COVID-19 doubled those of previous year: fever, cough, throat irritation and shortness of breath <sup>(3)</sup>.

Regarding health care ashore, this is regulated by the 2006 Maritime Labour Convention, according to which Port States must guarantee that seafarers who are on board

ships that are in their territory and need immediate medical attention have access to medical facilities ashore. Furthermore, ILO emphasizes that the exceptional measures adopted by governments to contain the COVID-19 pandemic cannot be cited as a valid reason for not complying with this international obligation. Despite this, cases such as that of the fishing vessel *Manuel Laura* were reported. This vessel, flagged in the United Kingdom and Galician capital and crew, arrived at Castletownbere (Ireland) with a suspected case of COVID-19. A nurse came on board and when verifying (by means of a PCR test) the presence of a positive case of COVID-19 and contravening all international regulations, the disembarkation of either the patient and the suspected cases was not allowed. The ship sailed to the Spanish port of Vigo, where the crew received appropriate health care. Supposedly the crew had been vaccinated a few days before starting the voyage.

There was also reported the case of a Russian sailor who suffered a brain haemorrhage and was also initially denied permission to enter a foreign port. In the end he received medical assistance thanks to the intervention of UN agencies.

While the International Health Regulations <sup>(17)</sup> clearly state that ships should not be prevented from entering ports or embarking and disembarking people for public health reasons, and the 2006 MLC makes it clear that all states must ensure that seafarers in need of medical assistance should be given access to medical facilities, under the United Nations Convention on the Law of the Sea, States are sovereign over the management of their ports and can control access to them, including the possibility of its closure when the vital interests of the State so require. Among these interests we could find *the protection of public health and ships that transport passengers with contagious diseases* <sup>(2)</sup>.

There is, therefore, no single, clear guideline that establishes what coastal states should do in declared cases of coronavirus on board ships of another nationality, so in addition to the reported cases in which access to ships with infected crew has been denied, we find the additional fees that could be charged for treatment and hospitalization <sup>(9)</sup>. In this regard, the International Health Regulations establish that there are limits to the charges attributable to ship passengers, who would not be charged for medical examinations or the costs of isolation or quarantine measures, but could be charged for the costs of hospitalization. The crew of the ships, however, would receive a different treatment since it is the owner who is responsible for their health and safety while they are on board, and therefore it is the owner who should bear the costs of medical treatment and hospitalization in case of being infected by COVID-19 during the campaign.

It is also necessary to take into account, as Stannard <sup>(6)</sup> points out, that some services or treatments are not available to the local population and therefore will not be available to seafarers arriving at those ports. The same author indicates that cases have also been reported in which some ships have refused to enter port and other cases of seafarers who have refused their right to disembark to receive urgent medical care.

Situations such as the above mentioned cause great concern among seafarers as they are afraid that, in the event of an accident or illness on board, they will not receive the appropriate health care.

In order to alleviate the problems arising from the unequal application of these regulations, IMO has published the following circular letters:

- Circular Letter No. 4204/Add.23 (1 July 2020), Recommendations for port and coastal States on the prompt disembarkation of seafarers for medical care ashore during the COVID-19 pandemic.

- Circular Letter No. 4204/Add.4/Rev.3 (16 July 2021) ICS Guidance for ship operators for the protection of the health of seafarers.

Also IMO Resolution MSC.473 (ES2) (21 September 2020) Recommended action to facilitate ship crew change, access to medical care and seafarer travel during the COVID-19 Pandemic, urges Member States to *provide seafarers with immediate access to medical care and medical facilities and facilitate medical evacuation of seafarers in need of urgent medical attention when the required medical care cannot be provided either on board or in the port of call.*

It is clear, therefore, that it is necessary to find a balance between the right of the State to protect itself against disease and the right of crew members and passengers to receive quality medical care.

Given the impossibility of eradicating the disease in the short term and even with the current possibility of vaccination and the existence of highly effective treatments, both preventive quarantine (prior to departure) and protection quarantine (immediately following the arrival) seems to be the best tools to prevent the spread of the virus in maritime transport.

But carrying out these quarantine periods is not exempted from both economic consequences for the sector<sup>(18)</sup> and psychological consequences for the crew members <sup>(1)</sup>.

## 2.4 Crew changes and repatriation

ILO 2006 MLC clearly states that seafarers have the right to be repatriated at no cost to them and sets a maximum period of service on board of 11 months. However, the outbreak of the pandemic led many countries to confine the population to prevent the spread of the virus. Other measures included the closure of ports, the prohibition of crew changes, the closure of borders and restrictions on the mobility of people. Nevertheless, in March 2020 the G20 leaders reaffirmed the need to maintain the provision of medical supplies, basic agricultural products and other materials and services across borders. They took on the commitment of working to resolve the disruptions in supply chains and to facilitate international traffic <sup>(8)</sup>.

Bearing in mind that seafarers make maritime transport possible and are, therefore, a key element in maintaining international supply chains, these opposing measures literally trapped hundreds of thousands of seafarers on their ships who, in the spring of 2020, they saw their campaign extended for more than 12 months. Crew changes and repatriation thus became a serious social, psychological and economic problem for many seafarers and their families <sup>(10, 19)</sup>.

Given the clear problems related to crew changes, IMO along with other UN agencies, ICS and ITF approached governments to get them to recognize seafarers as *key workers* and therefore exempt from quarantines and other mobility restrictions imposed on the general population <sup>(6)</sup>. In this regard, IMO has published the following legal instruments:

- Circular Letter No. 4204/Add.11 (24 April 2020) - EC Guidelines on protection of health, repatriation and travel arrangements for seafarers, passengers and other persons on board ships
- Circular Letter No. 4204/Add.13 (5 May 2020) - Recommendations for Governments and relevant national authorities on facilitating the movement of offshore energy sector personnel during the COVID-19 pandemic.

- Circular Letter No. 4204/Add.18 (26 May 2020) - Joint Statement IMO-ICAO-ILO on designation of seafarers, marine personnel, fishing vessel personnel, offshore energy sector personnel, aviation personnel, air cargo supply chain personnel and service provider personnel at airports and ports as key workers, and on facilitation of crew changes in ports and airports in the context of the COVID-19 pandemic.
- Circular Letter No. 4204/Add.21 (8 June 2020) - Joint statement IMO-UNCTAD – Call for collaborative action in support of keeping ships moving, ports open and cross-border trade flowing during the COVID-19 pandemic.
- Circular Letter No. 4204/Add.29 (4 September 2020) - Communication from the Secretary-General regarding the crew change crisis.
- Circular Letter No. 4204/Add.30 (11 September 2020) - Joint Statement calling on all Governments to immediately recognize seafarers as key workers, and to take swift and effective action to eliminate obstacles to crew changes, so as to address the humanitarian crisis faced by the shipping sector, ensure maritime safety and facilitate economic recovery from the COVID-19 pandemic.
- IMO Resolution MSC.437 (ES2), adopted on 21 September 2020: Recommended action to facilitate ship crew change, access to medical care and seafarer travel during the COVID-19 Pandemic.
- Circular Letter No. 4204/Add.32 (25 September 2020) - ICAO Harmonized guidance on facilitating passenger flights, including repatriation flights, using public health corridors during the COVID-19 pandemic.

On 25 September 2020 IMO stated: *some 400,000 seafarers from across the globe are now stranded on ships, continuing to work but unable to be relieved, in a deepening crew change crisis which threatens trade and maritime safety* <sup>(20)</sup>.

The IMO Secretary-General, aware of the challenges being faced by the global shipping industry to effect crew changes, remembering that each month about 150,000 seafarers need to be changed over to and from the ships which they operate, and highlighting that crew changes are necessary for ensuring safety, crew health and welfare, and the prevention of fatigue, urges, through the Circular Letter No. 4204/Add.14/Rev.1 (5 October 2020) - Recommended Framework of Protocols for ensuring safe ship crew changes and travel during the Coronavirus (COVID-19) pandemic, the implementation of these Protocols. This Circular Letter was later replaced by MSC.1/Circ.1636 Industry recommended framework of protocols for ensuring safe ship crew changes and travel during the coronavirus (COVID-19) pandemic.

On December 14, 2020, IMO makes a new appeal to the international community in this regard by publishing Circular Letter No. 4204/Add.35 Designation of seafarers as key workers, and urges the Member States and the relevant national authorities to attribute to seafarers the name of *key workers*, annexing a list with the members and associate members that have given this name to seafarers. To name seafarers as *key workers* is crucial to facilitate their movement for embarking and disembarking, seeking with this the improvement in well-being and health, in addition to the essential goods being transported safely and quickly. Moreover IMO, in its effort to name seafarers *key workers*, covers cruise ship workers, making it clear that all seafarers regardless of the ship they work on should be considered key workers. This Circular Letter suffered, since its first publication, several revisions. The last one, on 01 February 2022, shows that only 65 of IMO's 174

Member States and 2 Associate Members had communicated to IMO their recognition of seafarers as key workers.

Continuing in the effort to draw the attention of the Member States on this severe issue, the following IMO Circular Letters were published to reinforce the need to facilitate the crew changes and the recognition of seafarers as key workers:

- Circular Letter No. 4204/Add.36 (23 December 2020) - "No crew change" clauses in charterparties.
- Circular Letter No. 4204/Add.39 (7 May 2021) - Communication from the Secretary-General regarding the crew change crisis.

Despite these efforts, in July 2021 IMO estimated that some 250,000 sea workers could not return home in violation of rule 2.5 of 2006 ILO Maritime Labour Convention <sup>(21)</sup>.

Also the General Assembly of the United Nations adopted on 1 December 2020 the Resolution A/75/L.37 on International cooperation to address challenges faced by seafarers as a result of the COVID-19 pandemic to support global supply chains.

In this regard, ILO requested that, observing all the necessary protocols to avoid the transmission of the disease, the seafarers could be repatriated, establishing the so-called *green lanes* <sup>(22)</sup>.

In addition, ILO in the resolution of the Governing Body GB.340 / Resolution (Rev 2) -Resolution concerning maritime labour issues and the COVID-19 pandemic (8 December 2020), stated: *Noting with deep concern that it has been estimated that hundreds of thousands of seafarers presently require immediate repatriation as they are beyond their original tours of duty, in some cases for more than 17 consecutive months and often without access to shore-based leave and/or medical treatment, and that a similar number of seafarers urgently need to join ships to replace them.*

Additionally, European Commission approved on April 2020 the Guidelines on protection of health, repatriation and travel arrangements for seafarers, passengers and other persons on board ship, highlighting that: *in line with the Communication on the implementation of Green Lanes, seafarers should be allowed to cross borders and transit to take up their duties on board cargo vessels and return home after their contracts end* <sup>(23)</sup>.

### 3 VACCINATION

The urgency to recognize seafarers as key workers comes not only from the need to speed up their repatriation and facilitate crew changes, but also implies placing them at the top of priority positions for vaccination, and therefore reducing the risk of international infections. It is necessary to take into account that the international nature of maritime trade is not based only on the flow of goods between countries on different continents, but also on the cohabitation of crew members with several nationalities, since currently about two thirds of the crews of merchant ships are multinational <sup>(24)</sup>. At the end of the campaign, these crew members return to their homes and can be a gateway for the disease in their respective countries. The increasing availability of licensed vaccines makes it easier to vaccinate seafarers both on ships and in port, ensuring their health and preventing the international spread of the virus <sup>(25)</sup>. At the other end of the scale, we find that the vaccination rate in the main supplying countries for seafarers, with the exception of China, barely reaches 50%, increasing the risk that seafarers, even if they have been vaccinated on

their ships, may contract the disease in their countries of origin and spread it among their shipmates.

Likewise, members of fishing boats, which are an important source of world nutrition, have to be changed to avoid fatigue. IMO and the United Nations Conference on Trade and Development (UNCTAD) have come together to urge governments to ensure that seafarers, marine personnel, fishing vessel personnel, offshore energy and service workers supplier's personnel in ports are considered *key workers* who provide an essential service, regardless of their nationality and to exempt them from travel restrictions, also seeking to ensure the trade of essential goods (such as medical supplies and food) and that maritime transport is not endangered by the pandemic and associated containment measures <sup>(26)</sup>.

The pandemic generated by coronavirus has forced the world in general and the maritime world in particular to face a situation never seen before and in the shortest possible time so that its negative impact is diminished. Due to the speed of the spread of this disease, it was necessary to be able to vaccinate the seafarers so that it would not spread to the whole world and the economic impact would affect as little as possible. Therefore, ILO requests that member states guarantee access as soon as possible for seafarers to be vaccinated against COVID-19 <sup>(27)</sup>. In addition, the ICS offers a practical guide for the vaccination of seafarers and shipping companies against COVID-19 <sup>(28)</sup>.

Also, WHO Strategic Advisory Group of Experts on Immunization (SAGE) has developed a roadmap to prioritize the use of COVID-19 vaccines given its limited supply, naming seafarers as one of the groups of transportation workers to be prioritized for COVID-19 vaccination. This roadmap is based on the WHO SAGE values for the allocation and prioritization of vaccination against COVID-19 <sup>(29)</sup>.

Likewise IMO has published the following legal instruments regarding the prioritization of vaccination of seafarers:

- Circular Letter No. 4204/Add.38 (25 March 2021) - Joint Statement calling on all Governments to prioritize COVID-19 vaccination for seafarers and aircrew.
- Resolution MSC.490 (103) (14 May 2021) - Recommended action to prioritize COVID-19 vaccination of seafarers.
- Circular Letter No.4204/Add.40 (17 May 2021) - Due Diligence Tool to support seafarers' human rights during the COVID-19 pandemic.
- Circular Letter No. 4204/Add.41 (18 May 2021) - Roadmap for vaccination of international seafarers.
- Circular Letter No. 4204/Add.42 (17 September 2021) - Joint IMO/ILO statement on upholding medical assistance obligations to seafarers and accelerating seafarer vaccination programmes
- Circular Letter No. 4204/Add.43 (1 November 2021) - List of global ports offering vaccinations for seafarers.

Also on December 2021, the IMO Assembly Resolution (A.1160 (32)) on Comprehensive action required to address seafarers' challenges during the COVID-19 pandemic, was approved. The resolution consolidates issues related to crew changes, access to medical care, *key worker* designations, and vaccinations, as highlighted by Resolution MSC.473 (ES.2), MSC.1/Circ.1636/Rev.1 and MSC.490 (103) previously mentioned.

Finally, it is important to mention the Neptune Declaration on Seafarer Wellbeing <sup>(30)</sup>, which has been signed by more than 850 organizations and urges the authorities of the

different governments to take the next measures:

- Recognize seafarers as key workers and give them priority access to Covid-19 vaccines
- Establish and implement gold standard health protocols based on existing best practice
- Increase collaboration between ship operators and charterers to facilitate crew changes
- Ensure air connectivity between key maritime hubs for seafarers

#### 4 FATIGUE AND STRESS ON BOARD DURING PANDEMIC

The influence of the human element is known as a predominant cause in maritime accidents. As Luchenko and Georgiievskiy <sup>(19)</sup> indicate, the safety of navigation depends directly on the intellectual, physical and emotional capacities of the crew members. That is why ensuring the quality of living, working and leisure conditions for seafarers is extremely important.

The outbreak of COVID-19 pandemic has been a great challenge for seafarers and has faced them with a series of unexpected problems at work level, but also at physical and mental ones. Despite the efforts of international institutions and organizations to regulate the several problem areas related to the pandemic, in an effort to protect the health of seafarers and, at the same time, facilitate the safe continuity of maritime transport, their levels of fatigue and stress have increased markedly. The difficulties experienced in crew changes and repatriation, the extended working hours, the social isolation caused by mobility limitations in ports, the long periods of forced separation from families, the concern for the health of family members, the insecurity in job stability and consequently financial instability (especially if we take into account that, at the international level, only one in 5 workers is entitled to unemployment compensation), the limitation of equipment and medical services available, the restrictions on health care in some ports, the need to quarantine, and the possibility of being infected have been reported, among others, as causes of such an increase in fatigue and stress of these workers, as well as the rise in anxiety, depression and other psychiatric disorders in this group <sup>(1, 3, 6, 7, 9)</sup>.

Indeed, the study carried out by Qin et al. <sup>(31)</sup> in 450 merchant seafarers of Chinese nationality suggests the existence of a higher prevalence of depressive symptoms during the COVID-19 pandemic than before it. Specifically, 40.72% of those surveyed indicated having suffered symptoms of depression, reporting 9% of them severe symptoms. These figures are similar to those reported by Pauksztat et al. <sup>(32)</sup>, in which 41.5% of those surveyed, 671 merchant seafarers of various nationalities, reported having experienced feelings of sadness, depression or hopelessness, while 52.5% reported having felt fear, anxiety or worry. In fact, Pauksztat, Andrei and Grech <sup>(33)</sup>, compared the results of this survey with another one carried out before the pandemic, showing that the prevalence of feelings of depression and anxiety would be significantly higher during the duration of the health emergency than before it. For their part, Pesel et al. <sup>(34)</sup> offer a lower but significant figure: 26% of the 72 seafarers from different backgrounds invited to participate in their study reported having felt unhappy and depressed. The analysis of Baygi et al. <sup>(10)</sup>, in which 470 merchant seafarers of different nationalities belonging to two international shipping

companies in the oil transport sector took part, however, yields more conservative results: 12.3% reported having suffered from depression and 11.6%, anxiety. A notable finding of this work is that ship officers would be exposed to a higher risk of suffering from mental disorders, anxiety and stress levels than other crew members. Also extended work periods during the pandemic are one of the factors associated with depression.

Sliskovic <sup>(35)</sup>, taking as a reference a survey in which 300 merchant seafarers of different nationalities and embarked on different types of ships took part, suggests that both the mental, physical and social well-being of crews would be seriously affected by the increase in work periods on board during the pandemic. The first caused by suffering negative emotions, feelings, moods and cognitions; the second due to the long-term physical consequences of occupational stress and the third due to the isolated environment, because the increasing working hours on board would cause the crew members to feel forgotten and abandoned by the community.

The consequences of spending more time on board would be further aggravated by the difficulties of going ashore. Hebbar and Muket <sup>(36)</sup> observed in their research that 88% of the 450 merchant seafarers surveyed indicated having been *visibly impacted* by it; two out of five would have felt unhappy, 3 out of 10 stressed and one out of 6 completely fatigued.

Fatigue is another consequence of spending too much time on board becoming a risk for the safety of the ship and the crew <sup>(37, 38)</sup>. The research by Pauksztat et al. <sup>(32)</sup> points out that 36.6% of those surveyed would face different difficulties and challenges on board, including increased workload and fatigue. This assessment has also been noted by Coutroubis, Menelaou and Adami <sup>(39)</sup>, who conducted a study with 400 seafarers of different nationalities embarked on 76 merchant ships during the first months of the pandemic. This research shows that 80% of those surveyed indicated having suffered emotional and physical fatigue. Similar results were obtained by Shan <sup>(40)</sup> and Lucas et al. <sup>(41)</sup> in some of the interviews they conducted with merchant seafarers in their respective researches.

With regard to legal instruments related to fatigue and stress due to pandemic, none of the more than 40 OMI Circular Letters addresses in depth this severe problem.

However, other organizations, such as International Chamber of Shipping, ISWAN and Intertanko have published some guidance with regard to seafarers' welfare and mental health <sup>(42, 43, 44)</sup>.

Finally, it should be noted that, due to the mental health problems caused by COVID-19 in seafarers around the world, the Seafarer Crisis Action Team (SCAT) established by IMO, in cooperation with ILO, the International Transport Workers Federation and the ICS, seek to monitor the evolution of the situation, advice and assist seafarers in emergencies, among other missions. In this crisis, the SCAT has been a very important piece by contacting NGOs, unions and other associations to guide seafarers in the search for solutions to their particular situations

## 5 CONCLUSIONS

One of the sectors most affected by the current COVID-19 pandemic has been that of sea workers.

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.

If we add the fact that, except for cruise ships, merchant and fishing vessels do not carry specialized medical personnel on board, it is easy to imagine the anxiety that the appearance of a sick or suspicious person meant for the crews.

It should also be noted that, when the borders between the different countries were closed, it was impossible to change the crews, which caused an increase in the fatigue of the people on board and stress for those waiting to enrol since, depending on the type of agreement the seafarer may not have economic income while ashore.

Port management and the health care provided to those on board has also been unequal between different countries, ranging from the provision of hospital care ashore without limitations to the denial of port entry for ships with infected people on board, revealing the need to find a balance between the right of the states to protect themselves from disease and the right of crew members and passengers to receive medical care.

International shipping organizations and involved institutions have tried, for their part, to facilitate the process by developing and publishing recommendations, guidelines and regulations, attempting to respond to the difficulties that were appearing parallel to the development of the pandemic.

Attempts to recognize seafarers as key workers at the international level and thereby facilitate both priority vaccination and movement between the ship and their countries of origin have not given the desired results, with many of the IMO Member States showing clear reluctance on this issue.

Thus, despite the efforts of the international maritime community to regulate the diverse problem areas related to the outbreak of the pandemic with the aim of keeping seafarers free of coronavirus and facilitating the continuity of maritime transport, their levels of fatigue and stress have increased notably. This seems to demonstrate that these efforts have not been sufficient and that effective regulations have not been developed that specifically take into account how COVID-19 and actions aimed at the continuity of maritime transport have affected and may continue to affect seafarers' mental health. Several researches are beginning to show how these effects translate into an increase in depression, anxiety, stress, and emotional and physical fatigue.

It would therefore be necessary to focus on these effects and on the search for alternatives, in terms of seafarers' working conditions, to avoid them as much as possible in anticipation that the restrictions imposed at the international level will remain in place over time while vaccinations to global level do not reach adequate levels to guarantee herd immunity.

## REFERENCES

[1] Pougnet, R.; Pougnet, L.; Bleunven, P.; Jezequel, E.; Lucas, D.; Loddé, B. COVID-19: rethinking seafarers' temporality to improve healthcare and prevention practices?. *International Maritime Health* [online]. 2021, vol. 72, no. 1, p. 84-85. [Accessed: 01 October 2021]. Available at: <<https://doi.org/10.5603/IMH.2021.0015>>.

- [2] Klein, N. International law perspectives on cruise ships and COVID-19. *Journal of International Humanitarian Legal Studies* [online]. 2020, no. 11, p. 282-294. ISSN 1878-1527. [Accessed: 1 October 2021]. Available at: <[https://brill.com/view/journals/ihrs/11/2/article-p282\\_282.xml?language=en](https://brill.com/view/journals/ihrs/11/2/article-p282_282.xml?language=en)>.
- [3] Sagaro, G.G.; Battineni, G.; Chintalapudi, N.; Di Canio, M.; Amenta, F. Telemedical assistance at sea in the time of COVID-19 pandemic. *International Maritime Health* [online]. 2020, Vol. 71, no. 4, p. 229-236 [Accessed: 1 October 2021]. Available at: <<https://doi.org/10.5603/IMH.2020.0041>>.
- [4] Sagaro, G.G.; Battineni, G.; Chintalapudi, N.; Di Canio, M.; Amenta, F. Assessment of awareness and knowledge on novel coronavirus (COVID-19) pandemic among seafarers. *Healthcare* [online]. 2021, vol. 9, no.2, 120. [Accessed: 1 October 2021]. Available at: <<https://doi.org/10.3390/healthcare9020120>>.
- [5] Chatard, J.C.; Le Gac, J.L.; Gonzalo, S.; Vaysse, P.; Coulange, M. Management of COVID-19 on board the mixed cargo ship Aranui 5. *International Maritime Health* [online]. 2021 vol. 72, no. 3, p. 155-162 [Accessed: 1 October 2021]. Available at: <<https://doi.org/10.5603/IMH.2021.0031>>
- [6] Stannard, S. COVID-19 in the maritime setting: the challenges, regulations and the international response. *International Maritime Health* [online]. 2020, vol. 71, no. 2, p. 85-90. [Accessed: 1 October 2021]. Available at: <<https://doi.org/10.5603/IMH.2020.0016>>.
- [7] Arleiny; Soesatyo, Y.; Roesminingsih, E. Implementation of the international chamber of ship guidance for ship operators for the safety of the health seafarers in the new normal age. *IOP Conference Series: Earth and Environmental Science* [online]. 2021, vol. 750. [Accessed: 14 November 2021]. Available at: <<https://iopscience.iop.org/article/10.1088/1755-1315/750/1/012021>>.
- [8] Doumbia-Henry, C. Shipping and COVID-19: protecting seafarers as frontline workers. *WMU Journal of Maritime Affairs* [online]. September 2020, no. 19, p. 279–293 [Accessed: 23 September 2021]. Available at: <<https://doi.org/10.1007/s13437-020-00217-9>>.
- [9] Kaptan, M.; Kaptan, B.O. The investigation of the effects of COVID-19 restrictions on seafarers. *Australian Journal of Maritime & Ocean Affairs* [online]. August 2021. [Accessed: 14 November 2021]. Available at: <<https://doi.org/10.1080/18366503.2021.1961360>>.
- [10] Baygi, F.; Khonsari, N. M.; Agoushi, A.; Gelsefid, S. H.; Gorabi, A. M.; Qorbani, M. Prevalence and associated factors of psychosocial distress among seafarers during

COVID-19 pandemic. *BMC Psychiatry* [Online]. November 2021, vol. 21, 222. [Accessed: 14 November 2021]. Available at: <<https://doi.org/10.1186/s12888-021-03197-z>>.

[11] International Labour Office. *Guidelines on the medical examinations of seafarers*. Geneva: ILO, 2013. ISBN: 9789221274636. [Accessed: 13 October 2021]. Available at: <[https://www.ilo.org/wcmsp5/groups/public/---ed\\_dialogue/---sector/documents/normativeinstrument/wcms\\_174794.pdf](https://www.ilo.org/wcmsp5/groups/public/---ed_dialogue/---sector/documents/normativeinstrument/wcms_174794.pdf)>.

[12] World Health Organization. *Promoting public health measures in response to COVID-19 on cargo ships and fishing vessels: interim guidance* [online]. Geneva: WHO, 2020. [Accessed: 13 October 2021]. Available at: <<https://apps.who.int/iris/handle/10665/333978>>.

[13] World Health Organization. *An implementation guide for the management of COVID-19 on board cargo ships and fishing vessels* [online]. Geneva: WHO, 2021. [Accessed: 10 January 2021]. Available at: <[https://www.who.int/publications/i/item/WHO-2019-nCoV-Non-passenger\\_ships-2021-1](https://www.who.int/publications/i/item/WHO-2019-nCoV-Non-passenger_ships-2021-1)>

[14] The International Chamber of Shipping. *Guidance for ship operators for the protection of the health of seafarers: Coronavirus (COVID-19)* [online]. Version 1.0. London: Marisec Publications, 3 March 2020. [Accessed: 23 September 2021]. Available at: <<https://www.seafarerswelfare.org/assets/documents/resources/Coronavirus-COVID-19-Guidance-for-Ship-Operators-for-the-Protection-of-the-Health-of-Seafarers.pdf>>.

[15] The International Chamber of Shipping. *Guidance for ship operators for the protection of the health of seafarers: Coronavirus (COVID-19)* [online]. Version 4.0. London: Marisec Publications, 7 June 2021. [Accessed: 10 January 2022]. Available at: <[https://www.ics-shipping.org/wp-content/uploads/2021/06/Guidance-for-Ship-Operators-for-the-Protection-of-the-Health-of-Seafarers\\_Fourth-Edition\\_Final.pdf](https://www.ics-shipping.org/wp-content/uploads/2021/06/Guidance-for-Ship-Operators-for-the-Protection-of-the-Health-of-Seafarers_Fourth-Edition_Final.pdf)>.

[16] Sossai, p.; Uguccioni, S.; Mela, G.S.; Dicanio, M.; Amenta, F. Coronavirus variant COVID-19 pandemic: a report to seafarers. *International Maritime Health* [online]. 2020, vol. 71, no. 3, p. 191-194 [Accessed: 1 October 2021]. Available at: <[https://journals.viamedica.pl/international\\_maritime\\_health/article/view/68192](https://journals.viamedica.pl/international_maritime_health/article/view/68192)>. Available at: <<https://doi.org/10.5603/imh.2022.0002.2020.0034>>.

[17] World Health Organization. *International Health Regulations: 2005* [online]. Geneva: WHO Press, 2016. ISBN 9789241580496. [Accessed: 23 September 2021]. Available at: <<https://www.who.int/publications/i/item/9789241580496>>.

[18] Yazir, D.; Şahin, B.; Yip, T.L.; Tseng, P.H. Effects of COVID-19 on maritime industry: a review. *International Maritime Health* [online]. 2020, vol. 71, no. 4, p. 253-264

[Accessed: 23 September 2021]. Available at:  
<[https://journals.viamedica.pl/international\\_maritime\\_health/article/view/72044](https://journals.viamedica.pl/international_maritime_health/article/view/72044)>.  
Available at: <<https://doi.org/10.5603/IMH.2020.0044>>.

[19] Luchenko, D.; Georgiievskiy, I. Administrative restrictions in ports: practice of crew rotations during COVID-19 Pandemic. *Lex Portus* [online]. 2021, vol. 7, no. 3, p. 7-31. eISSN 2617-541X. [Accessed: 10 January 2022]. Available at: <[https://lexportus.net.ua/vipusk-3-2021/luchenko\\_2021\\_731.pdf](https://lexportus.net.ua/vipusk-3-2021/luchenko_2021_731.pdf)>. Available at: <<https://doi.org/10.26886/2524-101X.7.3.2021.1>>.

[20] International Maritime Organization. 400,000 seafarers stuck at sea as crew change crisis deepens. In: International Maritime Organization. *IMO: International Maritime Organization* [online]. London: IMO, 25 September 2020. [Accessed: 10 January 2022]. Available at: <<https://www.imo.org/en/MediaCentre/PressBriefings/pages/32-crew-change-UNGA.aspx>>

[21] International Maritime Organization. Frequently asked questions about how COVID-19 is impacting seafarers. In: International Maritime Organization. *IMO: International Maritime Organization* [online]. London: IMO, [2022?]. [Accessed: 4 February 2022]. Available at: <<https://www.imo.org/en/MediaCentre/HotTopics/Pages/FAQ-on-crew-changes-and-repatriation-of-seafarers.aspx>>.

[22] International Labour Organization. ILO: Release more than 150,000 seafarers trapped on board ships due to COVID-19. In: International Labour Organization. *ILO: International Labour Organization* [online]. Geneva: ILO, 8 June 2020. [Accessed: 4 February 2022]. Available at: <[https://www.ilo.org/global/about-the-ilo/newsroom/news/WCMS\\_747293/lang--en/index.htm](https://www.ilo.org/global/about-the-ilo/newsroom/news/WCMS_747293/lang--en/index.htm)>.

[23] European Commission. Guidelines on protection of health, repatriation and travel arrangements for seafarers, passengers and other persons on board ships: 2020/C 119/01. In: *Official Journal of the European Union* [online]. 14 April 2020, C 119/2. [Accessed: 23 September 2021]. Available at: <[https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020XC0414\(01\)](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020XC0414(01))>.

[24] Astratinei, C. Communication problems in a mixed crew environment. *Scientific Bulletin of Naval Academy* [online]. Naval Academy Press, 2016, vol. 19, no. 1, p. 13-16. eISSN 1454-864X. [Accessed: 23 September 2021]. Available at: <[https://www.researchgate.net/publication/304396957\\_COMMUNICATION\\_PROBLEMS\\_IN\\_A\\_MIXED\\_CREW\\_ENVIRONMENT](https://www.researchgate.net/publication/304396957_COMMUNICATION_PROBLEMS_IN_A_MIXED_CREW_ENVIRONMENT)>. Available at: <<https://doi.org/10.21279/1454-864X-16-I1-002>>.

[25] Schlaich, C.C.; Lucas, K.; Sydow, S.; Beyer, E.; Faesecke, K.P. Procedural aspects of COVID-19 vaccinations for seafarers on ocean-going vessels. *International Maritime Health* [online]. 2021, vol. 72, no. 3, p. 179-182. [Accessed: 01 October 2021]. Available at: <[https://journals.viamedica.pl/international\\_maritime\\_health/article/view/85056](https://journals.viamedica.pl/international_maritime_health/article/view/85056)>. Available at: <<https://doi.org/10.5603/MH.2021.0034>>.

[26] International Maritime Organization; United Nations Conference on Trade and Development. *Joint statement in support of keeping ships moving, ports open and cross-border trade flowing during the Covid-19 pandemic* [online]. 8 June 2020. [Accessed: 23 September 2021]. Available at: <[https://unctad.org/system/files/official-document/osg\\_2020-06-08\\_stat01\\_en.pdf](https://unctad.org/system/files/official-document/osg_2020-06-08_stat01_en.pdf)>.

[27] International Labour Organization. *Resolution concerning COVID-19 vaccination for seafarers: Fourth Meeting of the Special Tripartite Committee of the MLC, 2006 – Part I (19-23 April 2021)* [online]. 2021. STCMLC/Part I/2021/2 [Accessed: 10 January 2022]. Available at: <[https://www.ilo.org/global/standards/maritime-labour-convention/special-tripartite-committee/WCMS\\_782880/lang--en/index.htm](https://www.ilo.org/global/standards/maritime-labour-convention/special-tripartite-committee/WCMS_782880/lang--en/index.htm)>.

[28] The International Chamber of Shipping. *Coronavirus (COVID-19) vaccination for seafarers and shipping companies: a practical guide* [online]. Version 2.0. London: Marisec Publications, September 2021. [Accessed: 10 January 2022]. Available at: <<https://www.ics-shipping.org/wp-content/uploads/2021/09/Coronavirus-COVID-19-Vaccination-for-Seafarers-and-Shipping-Companies-A-Practical-Guide-2.pdf>>.

[29] World Health Organization. *WHO SAGE Roadmap for prioritizing uses of COVID-19 vaccines* [online]. 21 January 2022. WHO reference number: WHO/2019-nCoV/Vaccines/SAGE/Prioritization/2022.1. [Accessed: 4 February 2022]. Available at: <<https://www.who.int/publications/i/item/WHO-2019-nCoV-Vaccines-SAGE-Prioritization-2022.1>>.

[30] Global Maritime Forum. *Neptune declaration on seafarer wellbeing* [online]. 2022. [Accessed: 4 February 2022]. Available at: <<https://www.globalmaritimeforum.org/content/2020/12/The-Neptune-Declaration-on-Seafarer-Wellbeing-and-Crew-Change.pdf>>.

[31] Qin, W.; Li, L.; Zhu, D.; Ju C.; Bi P.; Li, S. Prevalence and risk factors of depression symptoms among Chinese seafarers during the COVID-19 pandemic: a cross-sectional study. *BMJ Open* [online]. 2021, vol. 11, no. 6. e048660. doi:10.1136/bmjopen-2021-048660. [Accessed: 23 September 2021]. Available at: <<https://bmjopen.bmj.com/content/bmjopen/11/6/e048660.full.pdf>>.

[32] Pauksztat, B.; Grech, M.; Kitada, M.; Jensen, R.B. *Seafarers' experiences during the COVID-19 Pandemic* [online]. Malmö: World Maritime University, 2020 [Accessed: 23 September 2021]. Available at: <<http://dx.doi.org/10.21677/wmu20201213>>. Available at: <[https://commons.wmu.se/cgi/viewcontent.cgi?article=1080&context=lib\\_reports](https://commons.wmu.se/cgi/viewcontent.cgi?article=1080&context=lib_reports)>.

[33] Pauksztat, B.; Andrei, D.M.; Grech, M.R. Effects of the COVID-19 pandemic on the mental health of seafarers: a comparison using matched samples. *Safety Science* [online]. Elsevier, February 2022, vol. 146, 105542 [Accessed: 23 September 2021]. Available at: <<https://doi.org/10.1016/j.ssci.2021.105542>> Available at: <<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8556536/>>.

[34] Pesel, G., Canals, M.L.; Sandrin, M.; Jensen, O. Wellbeing of a selection of seafarers in Eastern Adriatic Sea during the COVID-19 pandemic 2020. *International Maritime Health* [online]. 2020. Vol. 71, no. 3, p. 184-190. [Accessed: 01 October 2021]. Available at: <<https://doi.org/10.5603/IMH.2020.0033>>. Available at: <[https://journals.viamedica.pl/international\\_maritime\\_health/article/view/69755](https://journals.viamedica.pl/international_maritime_health/article/view/69755)>.

[35] Slišković, A. Seafarers' well-being in the context of the COVID-19 pandemic: a qualitative study. *Work* [online]. 2020, vol. 67, no. 4, p. 799-809. eISSN 1051-9815. [Accessed: 1 October 2021]. Available at: <<https://doi.org/10.3233/WOR-203333>>. Available at: <[https://www.researchgate.net/publication/347613308\\_Seafarers'\\_well-being\\_in\\_the\\_context\\_of\\_the\\_COVID-19\\_pandemic\\_A\\_qualitative\\_study](https://www.researchgate.net/publication/347613308_Seafarers'_well-being_in_the_context_of_the_COVID-19_pandemic_A_qualitative_study)>.

[36] Hebbar, A.A.; Muket, N. COVID-19 and seafarers' rights to shore leave, repatriation and medical assistance: a pilot study. *International Maritime Health* [online]. 2020, vol. 71, no. 4, p. 217-228. [Accessed: 1 October 2021]. Available at: <<https://doi.org/10.5603/IMH.2020.0040>>. Available at: <[https://journals.viamedica.pl/international\\_maritime\\_health/article/view/72010](https://journals.viamedica.pl/international_maritime_health/article/view/72010)>.

[37] Jepsen, J.R.; Zhao, Z.; Van Leeuwen, W.M.A. Seafarer fatigue: a review of risk factors, consequences for seafarers' health and safety and options for mitigation. *International Maritime Health* [online]. 2015, vol. 66, no. 2, p. 106–117. [Accessed: 1 October 2021]. Available at: <<https://doi.org/10.5603/IMH.2015.0024>>. Available at: <[https://journals.viamedica.pl/international\\_maritime\\_health/article/view/42447](https://journals.viamedica.pl/international_maritime_health/article/view/42447)>.

[38] Hystad, S. W.; Nielsen, M. B.; Eid, J. The impact of sleep quality, fatigue and safety climate on the perceptions of accident risk among seafarers. *European review of applied psychology* [online]. September 2017, vol. 67, no. 5, p. 259-267. [Accessed: 16 June 2022]. Available at: <<https://doi.org/10.1016/j.erap.2017.08.003>>.

[39] Coutroubis, A. D.; Menelaou, A. A.; Adami, E. H. Impact of coronavirus disease (COVID-19) on seafarers' life and well-being. *International Journal of Tropical Disease &*

*Health* [online]. 2020, vol. 41, no. 21, p.16-27. [Accessed: 1 October 2021]. Available at: <<https://doi.org/10.9734/ijt dh/2020/v41i2130398>>.

[40] Shan, D. Occupational health and safety challenges for maritime key workers in the global COVID-19 pandemic. *International Labour Review* [online]. 2021. [Accessed: 1 October 2021]. Available at: <<https://doi.org/10.1111/ilr.12220>>.

[41] Lucas D.; Jago, C.; Jensen, O.C.; Loddé, B.; Pougnet, R.; Dewitte, J.D.; Sauvage, T. Y.; Jegaden, D. Seafarers' mental health in the COVID-19 era: lost at sea?. *International Maritime Health* [online]. 2021, vol. 72, no. 2, p. 138-141. [Accessed: 4 November 2021]. Available at: <<https://doi.org/10.5603/IMH.2021.0023>>.

[42] The International Chamber of Shipping. *Handling a mental health crisis or emergency and spotting suicidal behaviour in seafarers* [online]. Version 1.0. London: Marisec Publications, September 2021. [Accessed: 10 January 2022]. Available at: <<https://wwwcdn.imo.org/localresources/en/MediaCentre/HotTopics/Documents/industry%20guidance%20ICS%20etc/Handling-a-Mental-Health-Crisis-or-Emergency-and-Spotting-Suicidal-Behaviour-in-Seafarers.pdf>>.

[43] INTERTANKO. *Crew welfare management and mental wellness* [online]. 2<sup>nd</sup> edition. London: INTERTANKO, January 2021. [Accessed: 10 January 2022]. Available at: <[https://wwwcdn.imo.org/localresources/en/MediaCentre/HotTopics/Documents/2021\\_Crew%20Welfare\\_Management\\_and%20Mental\\_Wellness\\_2nd-ed-web\\_2.pdf](https://wwwcdn.imo.org/localresources/en/MediaCentre/HotTopics/Documents/2021_Crew%20Welfare_Management_and%20Mental_Wellness_2nd-ed-web_2.pdf)>.

[44] Thomson, K. *Managing your mental health during the COVID-19 pandemic* [online]. ISWAN, 25 March 2020. [Accessed: 10 January 2022]., Available at: <<https://www.seafarerswelfare.org/seafarer-health-information-programme/coronavirus-covid-19/managing-your-mental-health-during-the-covid-19-pandemic>>. Available at: <[https://www.youtube.com/watch?v=rB\\_Nyk0LRSo&t=24s](https://www.youtube.com/watch?v=rB_Nyk0LRSo&t=24s)>.