Occupational safety and health challenges for maritime key workers in the global COVID-19 pandemic

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Abstract. *The COVID-19 pandemic has changed the world of work. But global trade is still recognized as an essential area of business, and maritime transport, being an engine of globalization, cannot be paused. Since the onset of the pandemic, few governments have allowed seafarers – who transport more than 90 per cent of global commodities – to leave their ships and return home. The travel restrictions related to COVID-19 have led to a crisis of occupational safety and health (OSH) at sea. Drawing on 29 interviews, this article explores the OSH challenges faced by international seafarers during the pandemic.*

Keywords: *occupational safety and health, OSH, COVID-19, seafarer, essential workers.*

1. Introduction

The COVID-19 pandemic has changed the world of work and impacted occupational safety and health (OSH) in unprecedented ways. The rapid spread of COVID-19 and the illness and fatalities it has caused have transformed or closed many workplaces (Shaw et al. 2020). According to the ILO (2020a), 94 per cent of the global workforce reside in countries with a high rate of workplace closures. Whereas many people have lost their jobs and incomes, many others continue to work in essential service sectors, such as health and social care services, maritime transport, and the food and agriculture industry. During the

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pandemic, protecting the health and safety of essential workers has become even more challenging than it was before (ILO 2020b). Ramos et al. (2020) argue that the threat of COVID-19 for essential workers in agriculture and food-related industries is more than a health issue – it is a human rights issue. They also find that employers and governments at all levels ignored, delayed and minimized the need for timely approaches to essential protections from COVID-19 in food work.

During the pandemic, essential workers have taken on risks for the benefit of society. They should benefit from a reciprocal duty of care from those who rely on their services, namely governments and employers (Guerrero et al. 2020; WHO 2007). Essential workers are more exposed to the virus that causes COVID-19, as shown in a survey conducted in Massachusetts, United States, in April 2020 (Hammonds, Kerrissey and Tomaskovic-Devey 2020). The survey's results indicated that 58 per cent of 2,500 essential workers felt unsafe at work; 71 per cent had difficulties practising social distancing; between 10 and 20 per cent of respondents lacked face masks and hand sanitizer, and about 31 per cent had not received training on preventing the transmission of COVID-19. Survey respondents reported increased occupational stress, burnout, nightmares and insomnia (Damian et al. 2020). The most visible essential workers are healthcare workers, who generally enjoy high social status and relative financial security. In contrast, there are also groups of invisible essential workers, such as agricultural workers and transport workers – including seafarers and truck drivers. Although these essential workers have made significant contributions to society during the pandemic, they may not have received a reasonable level of health and safety protection. They may have also faced additional health and safety challenges caused by lockdown measures and travel restrictions.

Media reports cover some of the OSH challenges faced by essential workers, but systematic empirical studies on the subject are still limited. This article seeks to fill this research gap by focusing on the case of seafarers – a group of invisible essential workers – to explore: (i) the effects that the COVID-19 pandemic has had on the maritime transport sector; (ii) the OSH challenges faced by essential workers at sea during the pandemic; and (iii) whether the COVID-19 pandemic has exacerbated existing maritime occupational hazards or created new hazards for seafarers. It will also identify the barriers to the successful protection of essential workers' health under international maritime, health and labour regulations, as well as conflicts between international regulations and local port restrictions that appear to have negatively affected seafarers' rights over the period under examination.

The remainder of this article is organized as follows. The second section provides an overview of the impact of COVID-19 on the shipping industry in 2020. The third section sketches out the maritime OSH challenges that predated the arrival of the pandemic. The fourth section presents the methods used in this study. The fifth section provides a legal analysis of the implementation of the Maritime Labour Convention, 2006, and the sixth section draws on empirical data from qualitative interviews and media coverage to analyse the problems faced by seafarers during the pandemic. The seventh section discusses the findings of the study, and the eighth section concludes.

2. COVID-19 and the shipping industry

In December 2019, the Chinese city of Wuhan recorded an outbreak of COVID-19 – the disease caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) – rapidly leading to a global pandemic (Polak et al. 2020). The cruise industry was the first visible victim of the rapid spread of COVID-19 to the maritime sector. From 7 to 23 February 2020, the largest cluster of COVID-19 cases outside mainland China was declared on the Diamond Princess cruise ship (Moriarty et al. 2020).

After the ship's quarantine began, crew members continued to perform their duties, such as delivering meals, changing linen and distributing medicines (Dragicevic 2020). The crew were acting as essential workers enforcing the quarantine. Media reports speak of seafarers' health and safety challenges in relation to the public: they were unable to practise social distancing in shared eating and living areas; they lacked personal protective equipment (PPE); and their right to refuse dangerous work was limited (Ratcliffe and Fonbuena 2020). Resources and conditions on board were not sufficient to support the crew's own quarantine process. Lacking proper training, sufficient knowledge of the new virus and PPE, seafarers in charge of passenger quarantine management faced unprecedented occupational hazards.

The case of the Diamond Princess was the preamble to the health and safety crisis at sea during the pandemic. The impact of COVID-19 and the related public health measures soon created enormous problems for the operation of the cargo shipping sector. In 2020, travel restrictions imposed by many States prevented regular crew changes. More than 300,000 seafarers were trapped on ships and could not be repatriated. An equal number of unemployed seafarers ashore could not work because they could not reach their ships (IMO 2020a).

In its COVID-19 travel advice of 29 February 2020, the World Health Organization (WHO) advised against any travel or trade restrictions, suggesting that these could be useful at the beginning of an outbreak only in order to allow countries to implement preparedness measures (WHO 2020a). Contrary to the WHO's advice, some countries imposed restrictions on the exchange of seafarers. For example, on 2 February 2020 the United States Coast Guard required all crew to remain on board "except to conduct specific activities directly related to vessel cargo or provisioning operations" (United States Coast Guard 2020). On 22 March, the Maritime and Port Authority of Singapore announced precautionary measures denying crew changes and shore leave (Pedley 2020). On 31 March, the Ministry of Transport of China started to prohibit foreign seafarers from conducting crew changes in Chinese ports (*CNSS* 2020). Similar bans on seafarers' shore leave and crew changes were implemented in many countries.

On 30 July 2020, the WHO updated its travel advice, explicitly recommending that essential travel of critical personnel in the transport sector – such as seafarers – should have priority in resumed international travel (WHO 2020b). A significant increase in crew changes can be observed following this advice as per the statistics of the S5 Agency World, an international port agency headquartered

in London.[1] However, a second wave of COVID-19 hit Europe and North America in October 2020, and border restrictions were tightened once again (*Inside Logistics* 2020). At the time of writing in 2021, the crew change crisis was still ongoing, and travel and border restrictions had become the "new normal" of the shipping industry. Maritime operations under such travel restrictions may exacerbate existing health and safety challenges and cause new hazards for seafarers.

3. Maritime OSH challenges: Problems predating the COVID-19 pandemic

Working at sea remains one of the most dangerous occupations (Acejo et al. 2018; Sampson et al. 2018), many studies indicating that seafarers face complex health and safety hazards. Lefkowitz (2013) estimated the injury rate in global shipping at 850 cases per 100,000 seafarers between 2008 and 2012. Between 2003 and 2012, the fatal accident rate among seafarers in the United Kingdom amounted to 14.5 per 100,000 workers, which was 21 times that in the general British workforce and 4.7 times that encountered in the construction industry (Roberts et al. 2014). The relatively higher workplace injury and fatality rate at sea can be attributed to various occupational hazards.

Maritime occupational accidents can be divided into three categories: accidents related to maritime disasters (accidents or incidents involving ships), such as collisions, foundering and explosions; on-duty accidents (personal accidents involving seafarers on duty), such as fractures caused by snapped mooring lines; and off-duty accidents, such as injuries caused by slips, trips and falls when seafarers are off duty on board a vessel (Roberts et al. 2014).

Seafarers also face significant mental health challenges. Compiling 20 published studies from 1960 to 2009, Iversen (2012) finds that, on average across the studies, suicides constituted 5.9 per cent of total deaths among seafarers during that period, ranging from 3.1 per cent to 18 per cent. According to the WHO, in 2012 suicide accounted for 1.4 per cent of all deaths worldwide (WHO 2014). In comparison, the suicide rate for seafarers is more than twice the global average. Lefkowitz and Slade (2019) conducted another survey among seafarers which found that 25 per cent of participants had scores suggesting depression, 17 per cent were considered to have anxiety, and 20 per cent had suicidal ideation. They also found that seafarers' anxiety rate was four times the rate for oil and gas workers and that mental health problems – such as depression, anxiety and suicidal ideation – were associated with an increased likelihood of injury and illness on board.

Workplace fatigue is another leading health and safety hazard in the shipping industry (World Maritime University 2020; Shan and Neis 2020). In 2019, the International Maritime Organization (IMO) pointed out that fatigue presents a considerable risk to life, health and the marine environment (IMO 2019). The

[1] S5 Agency World, "Crew Changes Handled by S5 Agency World since 1 May", Live Data Map with Completed & Ongoing Crew Changes around the World by S5 Agency World, accessed 1 March 2021.

24/7 nature of maritime transportation requires seafarers to work in shifts, using a watch system of either "four on/eight off" (two four-hour shifts per day) or "six on/six off" (two six-hour shifts per day). Placing an adequate number of crew on ships, scheduling timely crew changes and arranging shore leave opportunities are recognized safety management measures to reduce fatigue-related accidents.

The causes of maritime occupational hazards are complex. They include the demanding nature of shipping work, adverse weather conditions at sea, a hazardous working environment on board, psychosocial hazards, and organizational and social challenges (IIOSH, ILO and ICS 2000). The psychosocial challenges that seafarers face include prolonged separation from family and from a stable social environment, communication barriers among multinational crew, workplace violence, and sleep and rest abnormalities due to watchkeeping. Organizational risks include a blame culture, ineffective safety communication due to a lack of job security, and being abandoned overseas (Ek, Runefors and Borell 2014). Social challenges – including piracy, war and conflicts, bribery and discrimination in port States – can be more unpredictable.

Sampson and Ellis (2019) found that isolation, loneliness, lack of shore leave and separation from family predisposed seafarers to mental ill health. In particular, being unable to take shore leave and having a heavy workload and a poor diet are ship-specific factors causing seafarers to feel "down". Overall, 52.1 per cent of seafarers reported that being prevented from taking any shore leave made them feel this way. Drawing upon qualitative data, Sampson and Ellis (2019) illustrate the importance of shore leave. It allows seafarers to reconnect with their families via stable internet connections and to spend some time ashore, which can in and of itself make them feel happier.

4. Methods

This research adopts the methods of legal doctrinal analysis, media coverage analysis and qualitative interview data. I review the international legal instruments regulating global pandemics and seafarers' OSH rights. I use media coverage analysis and semi-structured online interviews to explore the experiences of international seafarers in order to answer the following research questions: (a) what OSH challenges have they confronted in accessing medical care, port-based welfare facilities and PPE, and in relation to crew changes?; and (b) how have they navigated the constraints and risks of the COVID-19 pandemic and their own perceptions of the related health risks?

This study adopts qualitative research methods, which are recognized as valuable instruments for obtaining insights into the experiences and views of stakeholders (Silvermann 2011). A key objective was to explore the consequences for seafarers of the COVID-19 pandemic and the related public health measures. To this end, I conducted in-depth semi-structured interviews with seafarers, safety managers, representatives of unions and maritime welfare organizations, and key informants from maritime authorities.

I used online invitations to recruit interviewees. I emailed invitations to maritime authorities, unions and charities, based on the contact information

available online, and I used LinkedIn, Facebook and WeChat social media as the primary approach to invite seafarers to participate in the research.

The interview schedules were designed to enquire about the challenges faced by seafarers during the COVID-19 pandemic with regard to four aspects: (i) the impacts of COVID-19 on employment; (ii) the health and safety challenges faced by seafarers during extended service at sea; (iii) the impacts of public health measures on crew changes and shore leave; and (iv) the resources and support available to seafarers during the pandemic.

Between June and December 2020, I conducted 29 interviews. Owing to the COVID-19 travel bans, and the restrictions that the Memorial University of Newfoundland placed on face-to-face fieldwork interaction with research participants, all interviews were conducted by Zoom, WeChat or Skype, at times and places that were convenient for the participants to share their experiences, perspectives and opinions. All interviews were conducted and recorded on audio files, with an average length of 101 minutes. The interviewees came from Canada, China and India. They included both seafarers who had worked at sea and seafarers waiting ashore to join ships during the COVID-19 pandemic, ship managers, maritime welfare professionals, and a representative of a maritime authority (see table 1). Being bilingual in English and Chinese, I conducted the interviews in both languages. The recordings were first automatically transcribed using the transcription software Transcribe by Wreally; they were then edited by research assistants, who signed confidentiality agreements. I translated the Chinese transcripts myself and used NVivo 11 software to assist with a thematic analysis of the data. Ethics clearance for this research was obtained from the Interdisciplinary Committee on Ethics in Human Research of the Memorial University of Newfoundland. Pseudonyms are used for all participants to preserve their anonymity.

My research methods also included legal doctrinal analysis and documentary analysis, drawing on legal sources to provide a technically accurate portrait of the applicable regulatory framework for maritime labour. My legal research drew on international conventions listed on the official websites of the IMO[2] and the ILO.[3] My media coverage analysis was based on Google News from March to December 2020, tracking news related to seafarers during the COVID-19 pandemic.

However, as in the case of other studies conducted during this period, this research also has its limitations. Because of university ethics restrictions on fieldwork and face-to-face interviews, I recruited participants through social media and conducted online interviews. On account of limited internet access at sea, seafarers were not able to participate in the research until they had signed off from their vessels; as a result, I was not able to interview seafarers who were still stranded at sea. Furthermore, the themes of discrimination, workplace tensions, fatigue-related accidents, anxiety, depression and attempted suicides are drawn from a limited sample of interviewees. Although these themes were also reported in the media, there were no direct measurements of these OSH hazards.

[2] http://www.imo.org/en/KnowledgeCentre/Pages/Default.aspx.

[3] https://www.ilo.org/global/standards/lang--en/index.htm.

Table 1. List of participants

Seafarers *n* = 16	Working on board during the COVID-19 pandemic *n* = 7 (Canadian: 1; Chinese: 4; Indian: 2) Waiting to join the ship *n* = 9 (Canadian: 7; Chinese: 2)
Ship managers *n* = 5	International ship managers (2) Domestic ship managers (3)
Union representatives *n* = 4	Union representatives of international seafarers (2) Union representatives of domestic seafarers (2)
Key informants *n* = 4	Maritime welfare professionals (3) Representative of maritime authorities (1)

5. Implementation of the Maritime Labour Convention, 2006, during the COVID-19 pandemic: A legal analysis

The ILO Maritime Labour Convention, 2006, as amended (MLC, 2006), provides minimum labour standards for international seafarers, including employment and social rights, such as entitlement to leave and repatriation, health care, welfare and social security protection. The elimination of all forms of forced or compulsory labour, and the elimination of discrimination in respect of employment and occupation, are fundamental principles of maritime labour governance. In addition, seafarers have the right to a safe and secure workplace that complies with safety standards, to decent working and living conditions on board ship, and to health protection, medical care, welfare measures and social protection. However, under travel bans and port restrictions related to the COVID-19 pandemic, many sovereign States have essentially violated seafarers' fundamental labour rights (ILO 2020c).

In October 2020, the International Transport Workers' Federation (ITF) and the International Chamber of Shipping (ICS) sent observations to the ILO Committee of Experts on the Application of Conventions and Recommendations (CEACR), pointing out that, during the COVID-19 pandemic, States that had ratified the MLC, 2006, had failed to comply with major provisions thereof, notably regarding cooperation among Member States, access to medical care, and the repatriation of seafarers (ILO 2020c). In addition to the humanitarian concerns linked to the violation of seafarers' rights, there was now a risk that fatigue and other health issues would lead to maritime casualties. The ITF and the ICS reported on a number of cases in which seafarers' rights had been denied – namely, the right to annual leave and shore leave provided in the MLC, 2006, Regulation 2.4; their right to repatriation, provided in Regulation 2.5; and their right to medical care, provided in Regulation 4.1. The CEACR conceded that, at the beginning of the pandemic, ratifying States might have been confronted with real situations of *force majeure*, which made it impossible for them to comply with certain of their obligations under the MLC, 2006 (ILO 2020c). However, more than ten months had elapsed since then, providing a realistically sufficient time frame for ratifying States to explore and apply new modalities of compliance with the Convention.

The CEACR requested that flag States[4] ensure that any extension of seafarers' employment agreements be reached with seafarers' freely expressed consent. Seafarers should be covered by adequate measures to protect their health and give them access to prompt and adequate medical care, including access to vaccination, while working on board. They should be able to live and work in a safe and hygienic environment (ILO 2020c). The CEACR requested port States to allow seafarers to enjoy their right to shore leave, subject to strict respect for the public health measures applicable to the local population. Port States should facilitate the repatriation of seafarers serving on ships, facilitate the replacement of seafarers, and ensure that seafarers on board ships within their territory be given access to medical facilities on shore (ILO 2020c). The CEACR called upon governments with labour-supplying responsibilities to ensure that the required facilities be put in place in relation to transport, testing and quarantine, in order to receive their seafarers back home and allow others to join their ships (ILO 2020c). Responding to the CEACR's observations, the ITF and the ICS pointed out that the observations clearly set out "that it is both legally and morally wrong for countries to continue to expect seafarers to work indefinitely, supplying the world with food, medicine, and vital supplies, while depriving them of their fundamental rights as seafarers, as workers and as humans" (ITF 2020).

As the pandemic stretched into a second wave, the CEACR undertook to continue examining the information provided by governments and/or social partners regarding seafarers' rights under the MLC, 2006, with a view to ascertaining Member States' compliance with the Convention (ILO 2020c).

6. Problems faced on board during the COVID-19 pandemic

The empirical data from qualitative interviews and media coverage analysis identify five prominent problems faced by seafarers during the pandemic: risk of infection, crew change problems, denial of shore leave, COVID-19 related discrimination and workplace tension, and other health challenges on board.

6.1. Risk of infection on board

COVID-19 infection was the first new biological occupational hazard faced by seafarers in recent years and it proved challenging to implement prevention measures – such as wearing masks – on board vessels. A cruise vessel seafarer explained the challenges they faced at the beginning of the pandemic as follows:

> A cruise vessel is a confined and complicated space. It is a large hotel, with a population the size of a small town. We have 1,600 crew and 5,400 passengers. Because of the Diamond Princess, we all feared the spread of the virus. We screened our passengers initially, and no passengers [who had] travelled to China within the past 14 days were allowed to board. The main conflict was whether to wear a mask or not. Because we are service workers, our sales crew asked to wear masks as a

[4] The flag State is the jurisdiction under whose laws the ship is registered and is deemed to be the nationality of the ship. According to Article 94 of the United Nations Convention on the Law of the Sea (1982), flag States shall effectively exercise jurisdiction over labour conditions in their fleet.

> personal protective measure. But the company replied that the mask would affect smile service, because the company followed the CDC [Centers for Disease Control and Prevention] advice and, at that moment, a mask was not recommended. The company did not allow sales workers to wear masks before the CDC issued the recommendation in April. (Chinese Second Officer Guo, 23 September 2020)

The second challenge for seafarers concerned visits on board by shore-based personnel. Even though the crew provided masks and other PPE for shore-based personnel, such as pilots and stevedores, the latter sometimes refused to use them. A union representative explained this challenge:

> Seafarers frequently interact with the port personnel. We request stevedores, pilots and inspectors to wear PPE, in particular facial masks. We are trying to mitigate the infection risk as minimal. However, pilots generally do not wear PPE when they are on board. We suggested that if it is not possible to keep a 2-metre social distance, then masks are required, but pilots' associations expressed their unwillingness to compromise. (Canadian Union Representative Lee, 20 November 2020)

A cook shared their experience of trying to implement the COVID-19 protocol with shore-based personnel:

> There were two pilots on board and they asked me: "Where should I eat?" I said, "On the bridge". They said, "No" and asked to eat in the messroom. I said, "Stay there. It is not you, but I have a suppressed immune system. I also have my career concerned if you insist on staying in the messroom." We need to let anyone coming on board know what needs to be done to follow our COVID-19 protocol. … They said they got screened. "Well, I don't know who you had supper with last night." This is quite frustrating that the visitors do not follow the rules. We have difficulties to go ashore for months. (Canadian Cook Ian, 13 October 2020)

Seafarers have been subject to a stricter COVID-19 protocol than that imposed on shore-based personnel, enduring restricted shore leave and crew change opportunities. If visitors on board did not follow the ship's COVID-19 rules, the seafarers felt that they were not being treated fairly, and workplace tensions and conflicts could arise.

The shortage of PPE on board was also reported as a common problem among seafarers. A chief engineer indicated that:

> The company did not have sufficient PPE for us, such as masks. There were 23 crew on board. At the beginning of every voyage, we got 150 masks. It was far from enough. We had to use one mask for several days. If we worked together, we wore masks, but we still had to save PPE. Later in the voyage, we just had no masks available." (Chinese Chief Engineer Feng, 20 September 2020)

This shows that when facing the risk of COVID-19 infection, seafarers did not have sufficient power to exercise their right to request PPE. They followed a strict COVID-19 protocol and even sacrificed their right to shore leave, but they were not able to ensure that visitors follow the ship's COVID-19 protocol. The power imbalance between seafarers and shore-based personnel has thus been further exacerbated during the pandemic.

6.2. Crew changes

The IMO has described the crew change problem during the COVID-19 pandemic as "a humanitarian, safety, and economic crisis" (IMO 2020b). On the Day of the Seafarer, 25 June, the IMO initiated the 2020 campaign "Seafarers are Key

Workers", highlighting the unique and essential work carried out by seafarers and pointing to the desperate situations in which many found themselves as a result of the inability to conduct crew changes (IMO 2020c). The IMO further explained that crew changes are vital to protect seafarers' health and safety; they ensure the safe operation of maritime trade and cannot be postponed indefinitely (IMO 2020b). According to the ILO (2021), in 2020, hundreds of thousands of seafarers had been required to remain on board beyond the 11-month maximum period provided for in the MLC, 2006. An extended stay on board not only threatens seafarers' health, but it also increases the risk of fatigue-related accidents. A health and safety manager of a ship management company explained:

> For container vessels, after six or seven months' work on board, crew exchanges should be arranged to prevent fatigue. For bulk carriers, I would put something like seven to eight months as the maximum break point that crew can accept. When seafarers are exhausted, and once equipment breaks down, little support can be received. For example, if the master lost all radar, he and the vessel would be in a precarious position. Although his training can help him operate the ship, he would be constantly worried, and considering his fatigue level, his decision-making ability could be affected, and then safety would be compromised. (Indian Health and Safety Manager Frank, 18 September 2020)

Being unable to return home makes seafarers feel very anxious. One person explained the situation at the beginning of the pandemic as follows:

> It was very complicated at the beginning. On 21 January, we had seafarers joining the ship from Wuhan. Soon many countries imposed restrictions. Any seafarers from China, or transferred from China, could not join their ships in Singapore. Travel bans were first imposed on Wuhan seafarers, then on Chinese seafarers, and then on all seafarers transferred from China. Many seafarers had worked on board for eight to ten months and had prepared to sign off. Suddenly they could not return home. The crew became very anxious and emotional. (Chinese Chief Engineer Fredrick, 20 September 2020)

As reported by S5 Agency World, before June 2020 crew change opportunities were rare.[5] After June 2020, some ports allowed seafarers to sign off. However, the crew had to submit to additional quarantine requirements.

> Shanghai was our home port. The company applied to conduct crew changes in Shanghai in June. We have about 300 to 400 staff to be repatriated. Shanghai eventually allowed the Chinese crew to sign off, but our deck and engine department seafarers were not allowed. They did not say we were not allowed; they just did not allow seafarers to sign on, which meant all navigation crew was unable to sign off. … We were heading to Shanghai to send the hotel crew home. The hotel crew was so excited to return home. Halfway there, we were told that crew changes were no longer allowed. We had been drifting at sea for almost three months, had not called at any ports, and had received supplies only at anchorage. The crew were very disappointed and angry, rushing to the captain's office, asking for an explanation. The crew started to make complaints through the Shanghai mayor's hotline. Crew change policies were always changing, leaving our crew in real torment. (Chinese Second Officer Guo, 23 September 2020)

The costs for shipowners of conducting crew changes increased significantly during the COVID-19 pandemic. Henry, a Hong Kong (China) ship manager

[5] See note 1.

explained that "depending on the types of ships, shipowners are affected differently. But my observation is that the crew budget has doubled this year" (29 September 2020). Even though their contracts had been expired for many months, seafarers were still willing to bear in mind the challenge faced by companies.

> If you are selfish, you can ask the company to sign off in June and leave the replacement problem to the company. But I have to consider my future career in the company. So I agreed to keep working on board until the company can find a replacement. My contract expired in February, but I signed off in August. (Chinese Second Officer Grayson, 16 September 2020)

When seafarers did apply to sign off, they faced refusals or delays due to the cost of crew changes for companies and port State restrictions. One seafarer recounted the difficulties he faced when he applied for repatriation:

> I joined the vessel in October 2019, and my service period should have been four months. In June, many ports started to allow seafarers to sign off. I sent emails to the company asking to sign off. The vessel was in Europe, and I learned that some seafarers signed off successfully. But my company refused to arrange it, because the flight ticket would cost them US$6,000–7,000, and the quarantine would cost about another US$1,500. I was exhausted and could not continue working anymore. I tried to sign off in the United States. But the port policy required that the flight take off before the departure of the ship. In June and July, there was only one flight back to China a week. It was impossible to fulfil all the conditions, including negative tests and 14 days on board. Most ports would just refuse Chinese seafarers' requests to sign off. (Chinese Chief Engineer Feng, 20 September 2020)

This state of affairs was corroborated by a union representative in Canada, who reported the following:

> There is no way to get you home. You just have to keep working, and some seafarers will spend their second Christmas away from their families. When I first started to address crew exchange problems, some seafarers had been on board for 12 months, then I learned of [people doing] 14 months of service and later 17 months. Now in October, I find Burmese seafarers have been on board for 19 months. Canada exempted seafarers [from] travel restrictions and granted international seafarers essential worker status. Many seafarers can successfully use this exemption policy to conduct their exchange in Canada. It is a cost issue now for the company whether to send seafarers home. … Seafarers are constantly in fear of being blacklisted and never getting jobs in the future. They cannot be open about these problems with shipowners. (Canadian Union Representative Hank, 9 October 2020)

Over the period under study, many States paid little attention to seafarers' rights when imposing and implementing travel restrictions on foreign citizens, leading to the crew change crisis in the international shipping industry. The interruption of international flights significantly increased crew change costs, which further reduced shipowners' incentives to conduct crew changes. Under this dual pressure, the crew change crisis developed into a global humanitarian and safety problem.

6.3. Shore leave

Shore leave is recognized as one of the most significant entitlements for seafarers and has been confirmed worldwide, including in the MLC, 2006. Seafarers work in a confined, isolated working environment on board vessels. They face

demanding working conditions, isolation, long hours of work, rigid organizational structures, and high levels of stress and fatigue and mental health issues (Hystad and Eid 2016). During the COVID-19 pandemic, seafarers' shore leave opportunities have been extremely restricted.

At the beginning of the COVID-19 pandemic, shore leave in ports was denied. Terminals in the United Kingdom and Germany placed blanket bans on seafarers' shore leave (Osler 2020). Although research shows that the risk of COVID-19 outbreaks due to crew taking shore leave is minimal in settings free of COVID-19 (Wilson et al. 2020), permission for shore leave is difficult to obtain during a pandemic.

> No. There is no shore leave for seafarers. (Indian Health and Safety Manager Frank, 18 September 2020)

> At the beginning, the company tried to reduce the infection risk and cancelled all shore leaves. Later on, the ports denied all shore leaves for seafarers. If shore leave is allowed in some ports, my colleagues would be nervous once I took the shore leave. Who have you contacted? (Canadian Cook Ian, 13 October 2020)

According to seafarer welfare professionals from Canada, even though seafarers' welfare facilities reopened in July, very few seafarers were able to take shore leave and visit the sailors' clubs.

> In Canada, the Government allowed controlled shore leave. And the sailors' club also adopted the COVID-19 protocol after it reopened in July. Very few seafarers take shore leave nowadays. The captain may not allow shore leaves. We are now delivering groceries for seafarers to the gangway. (Canadian Maritime Welfare Professional Richard, 3 December 2020)

There were no government restrictions on shore leave for domestic seafarers in their home countries, but some companies denied seafarers' shore leave rights.

> They've had policies in place that stated that shore leave is banned. Then they've come up with new policies that don't necessarily restrict it in every port, but they are allowing shore leave in ports where their vessels don't go. So it's a ban on shore leave. … We're fighting to get shore leave, because it's such an important component of mental health and well-being." (Canadian Union Representative Lee, 20 November 2020)

6.4. Discrimination and workplace tension

During the COVID-19 pandemic, the challenges that front-line workers have faced include stigma and discrimination at the workplace. The stigma, discrimination and social isolation faced by seafarers has come from various sources, including port States, their colleagues at sea and even their home States.

Chinese seafarers experienced racial and ethnic discrimination at the beginning of the pandemic, threatening their mental health (Roberts, Swanson and Murphy 2004). As the pandemic progressed, the crew change crisis highlighted the discrimination faced by the seafaring occupation, manifested in the stigma placed on internationally mobile workers at a high risk of virus infection.

As shown in the Seafarers Happiness Index published by the Mission to Seafarers, seafarers' concerns about racism and tensions had been increasing since late 2019 and victims did not feel that they could seek help (*Maritime*

Executive 2020.[6] Chinese seafarers have become the group with the highest prevalence of reported workplace discrimination, denial of crew changes and shore leave, and hostile treatment in ports. A Chief Engineer from Hubei reported experiencing such discrimination on board:

> I come from Hubei. The Wuhan lockdown in January affected me a lot on board. Our crew were from seven different countries, and only two were from China. All the crew knew were from China, and they just treated us as suspected cases. We had to be very careful, and we were quite afraid of them. There was no workplace violence, but gossip was inevitable. You know, the discrimination and stigma against Hubei people were everywhere. When I went to get drinking water, the other crew would walk away. If I sneezed, then they would all run away. (Chinese Chief Officer Yin, 17 September 2020)

In addition to being isolated in the workplace, Chinese seafarers faced tougher restrictions and inspections in the ports.

> When the ship arrived in the United States, all of the cities were very hostile. It was impossible to take any shore leave, and even buying a SIM card or getting supplies was difficult. The PSC [Port State Control] and immigration officers paid "special attention" to the Chinese crew. I would not say that they would give us trouble, but their attitudes were not friendly at all. For example, when they talked with seafarers from other countries, they would give them smiles. For our Chinese crew: no smiles and just infrared thermometer checks. The attitudes were very hostile, and they would ask us tons of questions. Then in March, the global pandemic was announced and the PSC officers conducted the checks through emails and no longer came on board. Immigration officers would keep a 2-metre social distance and started to treat all seafarers the same – the same thermometer checks, the same questions and keeping a social distance of 2 metres. (Chinese Chief Engineer Feng, 20 September 2020)

The governments of seafarers' home States also imposed restrictions upon their return. Taking China as an example, although the central government (including the Ministries of Transportation and of Foreign Affairs) issued a notice in April 2020 to ensure Chinese seafarers' right to rest, crew changes were often denied by the local governments (Xia 2020). Second officer Guo explained the difficulties faced by his colleagues:

> The policies were always changing, and it was annoying. If there was no hope of signing off, then we would try our best to adapt. But having hope of signing off only for it to be denied, that was desperate. … After another 14-day quarantine at sea, our Chinese hotel crew eventually signed off in Shanghai. … The worst cases were when the seafarers' home States refused their returns, as in the case of Viet Nam and South Africa at that time. The company's policy was to gather these seafarers on one ship, drifting at sea. (Chinese Second Officer Guo, 23 September 2020)

Maritime navigation requires seafarers to conduct frequent international travel through different States, including their routine voyages and their commutes when signing on and off. At the very early stage of the pandemic, Chinese seafarers – and in particular those from Wuhan – experienced discrimination at the workplace and during port inspections. After the global pandemic was declared, seafarers of all nationalities were treated as Chinese seafarers had been treated before them: they had no shore leave and were denied crew changes. The discrimination might come from colleagues, which could be more evident on

[6] See https://www.happyatsea.org/news/article/q2-2020-how-happy-are-you-about-interactions-onboard.

a vessel crewed by seafarers of many different nationalities. This type of internal discrimination soon diminished with the development of the pandemic, as the rights of seafarers from all countries were violated by port States worldwide. Following efforts by the industry, controlled crew changes were allowed to start up again gradually, alleviating port State discrimination. The worst scenario of discrimination arose when seafarers were denied permission to return home from overseas by their home States on account of those States' limited capacity to control the pandemic. Discriminatory comments were widespread on social media, typically voicing the opinion that "overseas workers and students will only bring the virus back to their home State" (*xiǎn wēi jìng* 2020).

6.5. Other health challenges on board

The risk of infection, discrimination and workplace tensions, and restrictions on crew changes and shore leave have had a significant impact on seafarers' health, including both physical and mental health. Port restrictions also limited the crew's ability to obtain fresh produce. Chief Officer Yin explained the difficulty he faced in the United States:

> Our vessel operated between Chinese ports and American ports. We used to purchase our supplies during the shore leave. During the COVID-19 pandemic, we could not do that anymore. Because of shore leave restriction and the company's concern for the infection risk, we could not get supplies in the United States. During the return voyage, we ran out of all fresh vegetables and had only onions and potatoes left. (Chinese Chief Officer Yin, 17 September 2020)

It also became very difficult for seafarers to access medical care. In an extreme case, the IMO reported that a 45-year-old seafarer who showed signs of having suffered a stroke was refused emergency medical assistance by the port authorities. The ITF provided support and appealed to the IMO and the ILO for their assistance. The two UN agencies intervened urgently at the government level to ensure that the international conventions were respected, and eventually the seafarer obtained a life-saving emergency evacuation and medical care.[7]

Without proper shore leave opportunities, seafarers' access to primary health care was another challenge. For domestic seafarers navigating in their home country, refilling prescriptions and getting flu shots could be very difficult.

> Some of our members request shore leave to go and see their doctors, and their requests are being denied. You have a right to see your doctor if you are not feeling well. We had one member who had an appointment to go get a flu shot and the company refused to let him go to the appointment. Getting prescription refills is another challenge for seafarers without shore leave. (Canadian Union Representative Lee, 20 November 2020)

Accumulated fatigue has been a prominent health and safety concern for seafarers during the COVID-19 pandemic.

> From January, we were unable to do crew changes. I was exhausted. I worked for 11 months before signing off. I could not rest well. I was worried about my family and colleagues, and about how to protect ourselves in the port. The atmosphere

[7] See "Spectacular rescue of a seafarer suffering a stroke" section in IMO (2020d).

> on board was terrible, and the crew could not concentrate. I talked to my junior colleague, and he said he was unable to concentrate and kept sustaining minor injuries. (Chinese Chief Engineer Feng, 20 September 2020)

According to a survey conducted by a union of seafarers that participated in this research, 67 per cent of 166 member seafarers reported that the COVID-19 pandemic had made their jobs more stressful.[8] Restrictions on shore leave, worrying about family and worrying about their personal health were the top three stressors for seafarers. Increased levels of stress and accumulated fatigue threatened maritime safety. Second Officer Guo shared his experience of navigation during the COVID-19 pandemic:

> We are on a cruise vessel, and luckier compared to those on cargo vessels. We had more entertainment facilities, a larger-size crew and nice food on board. But we were still very anxious. In June, we had an incident in Korea. The port did not allow us to stay in port overnight, and they asked us to depart at 23:59. I cannot tell you the details of the incident. Meanwhile, another severe accident occurred in the same port. The company started to investigate the incident but did not discipline any crew, because the crew were all exhausted. After the incident, anxiety on board increased. (Chinese Second Officer Guo, 23 September 2020)

Chief Engineer Feng further illustrated the impact of the COVID-19 pandemic:

> My ability to judge was affected during the COVID-19 pandemic. You know there were alerts in the engine room. Before COVID, I could solve these alerts by myself with confidence. But staying at sea for months on board, with little hope of going home, I felt that I could not solve problems by myself. I could not rest properly and could not concentrate. I started to prefer teamwork, and when we got alerts I preferred discussing them with the 3rd and 4th engineers. This was safer than me doing the work on my own. I had injured myself because I could not concentrate at all. … We did not have mental health support on board. I learned that some Chinese state-owned companies disseminated mental health brochures. We could not call any mental health hotlines. You know, the internet is limited on board. (Chinese Chief Engineer Feng, 20 September 2020)

Extended periods on board make seafarers exhausted, anxious and depressed. Some seafarers compared themselves to prisoners or slaves, and some had considered suicide (Almendral 2020). A health and safety manager reported on a seafarer's suicide attempt:

> An officer had stayed on board a bulk carrier for ten months. His original contract was for eight months plus or minus one month. His ship had arrived in port and he had packed his bags and was waiting to sign off once the ship berthed. The ship anchored, owing to port congestion. It then received an email stating that his replacement could not join and his connecting flights could not be arranged, owing to the current COVID-19 situation. He needed to sign off as his father was ailing back home. In frustration, he jumped overboard. Luckily, the ship was off Shanghai, an area known for dense fishing traffic. One of the fishing boats noticed this and rescued the seafarer. He was then taken back to his ship. (Health and Safety Manager Henry from Hong Kong (China), 29 September 2020)

He further explained that this was not the only case he had encountered of seafarers attempting to commit suicide. Although the management company was trying its best to arrange for seafarers' return home, shipowners and charterers

[8] Unpublished survey (union details confidential).

select ports and make voyage-related decisions, and they usually prioritize their business needs. As fewer ports allowed crew changes, it became more likely that seafarers would be kept on board, with no freedom to return home or even take shore leave.

7. Discussion

Rather than being a mere temporary rupture, the COVID-19 pandemic has revealed pre-existing health and safety challenges for seafarers. In addition to exposing seafarers to a new biological hazard, the pandemic has also worsened certain situations. It has increased seafarers' fatigue and placed them at greater risk of fatigue-related accidents; they have been deprived of shore leave and denied medical care; and the situation has aggravated workplace tensions and racial discrimination.

The weak support of flag States, the border restrictions imposed by port States, travel bans on citizens of high-risk States, and the increased costs of flights have interrupted routine crew changes and shore leave opportunities. As a result of their extended stay at sea without shore leave, seafarers are experiencing extended physical, mental and emotional strain that can impair alertness and their ability to operate a ship or perform safety-related duties. Some seafarers have been kept on board for more than 18 months (Hines and Burt 2020).

The Secretary-General of the IMO, Kitack Lim, pointed out that the global pandemic has plunged many seafarers into desperate situations, finding themselves unable to take part in crew changes or be repatriated, lacking access to medical care and PPE, and being denied shore leave (IMO 2020c). These challenges, he said, are the result of well-intentioned measures to protect public health and safety, but they include restrictions that have disproportionate consequences for shipping and seafarers.

During the COVID-19 pandemic, public health measures have had unintended effects, beyond those relating to the biological hazard of the virus itself, that have exacerbated other risks faced by seafarers. Travel restrictions are one of the most prominent of these effects, disrupting regular crew changes for seafarers. The inability to carry out crew changes intensifies the demanding nature of shipping by further extending working periods away from home and family, and by imposing lengthy exposure to accident, physical, chemical and psychosocial hazards in a confined working environment. In addition, fatigue levels have inevitably increased as a result of extended service on board as seafarers have not been able to find relief from accumulated mental health problems by being reunited with their families.

Previous studies (for example, Walters and Bailey 2013) have recognized that seafarers have one of the most hazardous occupations – the demanding nature of shipping work, the risk of accidents, chemical and biological hazards, and the psychosocial challenges faced by seafarers make the seafaring occupation a high-risk job. The literature has focused more on hazards related to its 24/7 industrial nature and to environmental factors, and on the psychosocial challenges related to ship management, including shift systems and the hierarchical structure of authority on board. States' policies have not previously been regarded as a source

of risk for seafarers' health and safety. The COVID-19 pandemic has brought an unprecedented biological hazard to bear on seafarers and other essential workers and has revealed systematic discrimination against international seafarers by many countries. As of 23 April 2021, 98 States had ratified the MLC, 2006. However, only 58 IMO Member States and two associate members[9] recognized seafarers as key workers (IMO 2021). The COVID-19 pandemic has now become the new normal for the world. There is therefore no excuse for countries, including flag, port and crew States, to refuse to make efforts to allow seafarers to exercise their fundamental rights to crew changes, annual leave and shore leave. Collaboration between States, maritime employers and unions is necessary in order to address the health and safety crisis faced by seafarers.

The nature of the shipping industry makes seafarers international travellers in two respects. First, when signing on and off vessels, seafarers have to take international flights to reach the port of embarcation or to return home. Second, when working on board, seafarers travel together with the cargo or passengers and stop at various ports. Travel bans and border restrictions have a more complex impact on them than on other transportation workers, such as aviation workers and international truck drivers. The need to connect between marine ports and airports further increases the uncertainty of crew changes. The second wave of the pandemic ushered in various changes to port policies, and flights were being continually rescheduled. For shipowners, frequent changes to travel restrictions and the rescheduling of flights have increased the management cost of crew changes. According to the International Chamber of Shipping, one shipowner faced a bill of about US$820,000 for the changeover of 18 seafarers. Each seafarer exchange cost more than US$45,000 (Bockmann 2020). In countries where seafarers are recognized as key workers, they can catch a connecting flight, but in other countries, seafarers may not be able to transit. Frequently changing travel bans and border restrictions, and related cost increases, limit shipowners' ability and willingness to conduct crew changes.

Extended stay on board has been proven to increase the risk of fatigue-related accidents. Having to keep watch round the clock and work either two four-hour shifts or two six-hour shifts makes it impossible to have uninterrupted rest on board; for that reason, a crew change must be arranged after three to six months' service at sea. It has not been possible to ensure regular crew changes during the pandemic, and the maximum service period of 11 months provided under the MLC, 2006, has routinely been exceeded. Union representatives have received reports that some seafarers have worked more than 18 months continuously at sea (Hines and Burt 2020). Shore leave has become a luxury, even in ports that allow seafarers to take controlled shore leave. This is because concern for potential exposure to infection usually decides companies against it. But shore leave is known as one of a very limited set of interventions that can help seafarers overcome the isolation and loneliness they experience on board (Sampson and Ellis 2019). Inevitably, the risk of fatigue, anxiety, depression and suicidal ideation have increased alarmingly. As already mentioned, this research encountered reports of attempted suicides.

[9] The two associate members are Hong Kong (China) and Faroe Islands.

The IMO and the ILO have made considerable efforts to call on their Member States to address the health and safety crisis faced by seafarers. However, it is clear that these efforts have had limited effect, reflecting the problem of weak enforcement of international labour and safety standards. To address the current and future global crises, these two organizations should be equipped with more robust enforcement measures to ensure that Member States implement international labour and safety standards.

8. Conclusion

In its exploration of seafarers' experiences, this article is one of the first to shed light on essential workers' health and safety challenges during the COVID-19 pandemic.

Although exposure to COVID-19 is the most visible hazard of the pandemic, there are additional health and safety challenges arising from the public health measures implemented to control the spread of the virus. These measures – including lockdowns, travel bans and border restrictions – have been introduced to protect local communities from the risk of infection. However, the unintended effects of these measures on essential workers' rights cannot be ignored. By exploring maritime key workers' experiences during the COVID-19 pandemic, this article has contributed to the knowledge of OSH challenges for essential workers during global health crises. In addition, it has revealed the weakness of the current international labour governance system, particularly in terms of its limitations in protecting seafarers as essential workers in international transportation.

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