

Impact of the COVID-19 pandemic on the well-being of the stranded seafarers

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Abstract

Purpose – This study examines the impact of the COVID-19 pandemic on the well-being and mental health of the seafarers who had to overstay on ships after their contracts expired, identifies topics that affect their mental distress and recommends measures to overcome these.

Design/methodology/approach – Four research questions about the impacts on the seafarers before and during the COVID-19 pandemic were raised. A literature review and a questionnaire survey were conducted to find answers. Ship officers were asked to assess and fill in the questionnaires for the stranded seafarers onboard in order to collect sufficient samples rapidly for this study.

Findings – Despite the guidelines provided by the shipping companies being adequate to protect the seafarers from COVID-19, their mental distress levels have been worsened under the pandemic. The crew change crisis causes anxiety and negatively impacts on their working performance; however, the repatriation expectation of the stranded seafarers is of the highest concern. Three topics were identified as having impacts on the mental health of the stranded seafarers: crew change crisis, low vaccination rate and the lack of key worker recognition. While international stakeholders are advocating for support in these issues, the shipping companies and the seafarers need to do their parts to exacerbate the mental distress, and to survive and thrive beyond the pandemic.

Originality/value – The findings of this study will help the shipping companies to navigate the challenges and the seafarers to overcome issues caused by the COVID-19 pandemic.

Keywords COVID-19, Pandemic, Seafarers, Well-being, Mental distress, Anxiety

Paper type Research paper

1. Introduction

In late December 2019, an outbreak of a pneumonia disease caused by an unknown coronavirus was reported in Wuhan, China. With many countries reporting similar cases, on 11 February 2020, the World Health Organization (WHO) announced SARS-CoV-2 (Severe Acute Respiratory Syndrome CoronaVirus-2) as the name of the virus, and COVID-19 (COrona Vrus Disease-2019) as the name of the disease. On 11 March 2020, with approximately 118,000 infections in over 110 countries, WHO declared COVID-19 a pandemic. By the end of October 2021, there were more than 249 million cumulative cases and 5.04 million deaths across the globe (WHO, 2021a).

COVID-19 patients suffer from influenza, serious lung infections, and shortness of breath leading to death. In response to COVID-19, many countries implemented border lockdowns and restricted people's movements, causing unintended disruptions to supply chains of goods and commodities. In addition to physical and economic damages, an OECD study finds that the prevalence of anxiety and depression increased across the population, and the most



affected are those who became unemployed and those who experienced financial insecurity (Hewlett *et al.*, 2021).

The shipping companies face challenges such as delays at ports, the lack of ship space and containers, how to protect the seafarers from the threats of COVID-19, and how to sustain the well-being of the seafarers to ensure ships navigate safely. Using the seafarers of four shipping companies in Taiwan as the subjects of this study, four research questions were raised:

- (1) To protect the seafarers onboard from COVID-19, shipping companies issued restrictive and imposing guidelines, including mask-wearing, social distancing, access control, room isolation, shore visit restrictions, etc. Are these guidelines effective?
- (2) Before the pandemic, studies on the mental health and well-being of the seafarers have shown that seafarers suffer from higher levels of depression, anxiety, and suicide ideation than the general population. With the COVID-19 pandemic, do seafarers suffer from more mental distress?
- (3) As border lockdowns and air travel restrictions were implemented, many seafarers were forced to overstay onboard after their contracts expired. How are the mental distress levels of the stranded seafarers impacted?
- (4) What are the key issues that influence the mental health and the well-being of the seafarers during the pandemic? Are these issues being fixed?

To find the answers to questions 1 and 3, a questionnaire survey was conducted with the help of shipping managers and ship officers of the participating shipping companies. In answer to questions 2 and 4, literature on the well-being and mental health of seafarers before and during the pandemic were examined, and factors affecting the well-being and mental health of the seafarers were identified.

2. Literature review

2.1 *Well-being, mental distress, and work conditions of seafarers before the COVID-19 pandemic*

Oxford English Dictionary defines well-being as: “the state of being or doing well in life; happy, healthy, or prosperous condition; moral or physical welfare of a person or community”. The feeling of being or doing well is subjective, and generally implies the presence of positive emotions (e.g. contentment, happiness), and the absence of negative emotions (e.g. depression, anxiety) (Frey and Stutzer, 2002; CDC, 2021).

Mental distress include anxiety, depression, suicide ideation, etc. Anxiety is “an emotion characterized by an unpleasant state of inner turmoil, often accompanied by nervous behavior such as pacing back and forth, somatic complaints, and rumination about the negativities” (Davison, 2008). Anxiety is common in seafarers who work long hours in a stressful environment that afford little room for mistakes, and live in a confined space with limited human contacts. It is invisible, includes subjectively unpleasant feelings of dread over anticipated events, and may be triggered by events such as the COVID-19 pandemic (Niknamian, 2019; Seligman *et al.*, 2000; Oldenburg *et al.*, 2010; ILO, 2021).

Depression is characterized by persistent sadness and loss of interest in previously enjoyed activities, often causing impairment in work or personal life. Anxiety and depression can gradually increase and trickle into the workplace impacting work output, and impairing performance on tasks with high attentional or short-term memory demands (Chamorro-Premuzic *et al.*, 2008; Humphreys and Revelle, 1984; Sarason, 1984; Gobind, 2018).

Seafarers work and live onboard with limited access to social contact and entertainment means. They are typically contracted to work for 6–8 months on ships with leaves after the period, and commonly work 10–12 h shifts for days without a break. When they are sick or injured, treatments at sea are not as easy as visiting a clinic onshore. Ship officers are trained to provide basic medical treatments with limited medical supplies onboard, and Telemedical Assistance Services (TMAS) operated by most seafaring countries provide remote consultations by qualified medical doctors, through email, telephone, radio, videoconference, etc. Although the officers and TMAS help to treat unforeseen sicknesses or injuries, they are inadequate due to a lack of medical qualification of ship officers, limited medical equipment and medicines onboard, delayed treatments, misdiagnoses, incomplete patient records, etc (Sagaro and Amenta, 2020).

Iversen (2012) reviewed literature that reported the fatality of seafarers on ships between 1960 and 2009, compiled the percentages of seafarer death by suicide (5.9%) and seafarer death due to illness (13.1%), when compared to those of the total population. The ratios would be higher if a portion of seafarers missing at sea was attributed to suicide. Reasons for the seafarers becoming depressed include loneliness, stress, fatigue, insomnia, lack of shore leaves, bullying/violence/criminalization, job security, repetitive food, alcohol/drug addictions, piracy/kidnapping, stranding, etc. Furthermore, the mood of the seafarers correlating with returning home, returning to work, or voyage extensions, is good, bad, and worst respectively (Sampson and Elio, 2019).

Co-sponsored by ITF Seafarers' Trust, a group of researchers from Yale University surveyed the levels of depression, anxiety, and suicidal ideation among seafarers, based on scores from 2 previously-validated mental health screening instruments, PHQ-9 (9-item Patient Health Questionnaire) for depression and GAD-7 (7-item General Anxiety Disorder Questionnaire) for anxiety. In addition, the Copenhagen Psychosocial Questionnaire was used to assess the psychosocial work environment scores. Out of 1,572 returned valid questionnaires, depression, anxiety, and suicidal ideation were prevalent among the seafarers at 25, 17, and 20%, respectively. In comparison, a German general population study by PHQ-9 returned a 6% depression rate. Furthermore, 55% of shipping employer respondents stated that in the previous 10 years, their companies had not significantly addressed the issues of seafarers' mental health and welfare on board, proving that these issues are not recognized as important as the profitability (Lefkowitz and Slade, 2019).

2.2 Well-being of seafarers during the COVID-19 pandemic

As COVID-19 spread and border lockdowns took place, work conditions and mental distress of seafarers deteriorated due to a number of factors. First, many countries restricted air flights from countries where outbreaks occur in order to contain the virus, making it difficult and costly, if not impossible, for shipping companies to arrange for crew changes and repatriations. Consequently, many seafarers could not leave the ships when their contracts expired, and an equal number of seafarers could not join the ships to start their contracts. Second, there were additional guidelines, procedures, and restrictions for the prevention of COVID-19 on ships and at ports, which imposed an extra workload and restrictions on the seafarers. Third, port authorities prohibited shore leave and treated seafarers as potential virus carriers. Fourth, anxiety about sickness or death due to the COVID-19 infections would be enhanced each time cases of infections or fatality were reported. Fifth, for the seafarers whose contracts are expired but they are prohibited from returning home, mental distress caused by the COVID-19 pandemic are amplified (UN, 2020; Asmundson and Taylor, 2020; Battineni *et al.*, 2021).

2.3 Topics relating to well-being of seafarers during the COVID-19 pandemic

2.3.1 Crew change and repatriation crisis. Soon after WHO declared COVID-19 a pandemic in March 2020, many governments implemented border lockdowns and imposed restrictions on people movements to protect citizens from COVID-19 infections. By April 2020, ITF reported that many seafarers could not leave their ships when their contracts expired, and many of them were exhausted and distressed. Financial Times reported: “It is a humanitarian crisis, if they are not allowed to get off their ships soon, there may be tragic consequences, . . . , and captains could be found criminally culpable if they sailed a vessel where concerns of fatigue had been raised” (Hollinger *et al.*, 2020).

Impediments to crew changes have four major consequences. First, infringement of contractual rights of the seafarers; second, infringements of international legislations, including Maritime Labour Convention 2006 (ILO, 2006); third, the mental distress suffered by seafarers can negatively impact their work performance and affect the safety of shipping navigation. Fourth, for the seafarers who are stranded on ships, there is an equal number of seafarers who cannot join ships to replace their fellow seafarers; most of them are not being paid or compensated while waiting to board, therefore, their entitlements to work and income is infringed (ILO, 2021).

Despite the efforts of international stakeholders to advocate for seafarers to be granted safe passages to embark and disembark ships or airplanes, little change occurred throughout 2020. In May 2021, Global Maritime Forum (GMF), an international not-for-profit organization founded by 14 stakeholders in the shipping industry, launched Neptune Declaration Crew Change Indicator (NDCCI) program, which “outlines the main actions that need to be taken to resolve the crew change crisis”, and is endorsed by more than 850 organizations. Starting from May 2021, GMF has published a monthly NDCCI report on the percentages of seafarers onboard beyond the expiry of their contracts, those onboard for more than 11 months, and the overall vaccination rate, as of the 15th of the previous month. NDCCI is based on the data from 10 ship managers who manage a total of approximately 90k seafarers — 5.5% of 1,647,500 seafarers as of September 2021 (ICS, 2021; Global Maritime Forum, 2021). NDCCI October 2021 report showed that 7.9% of seafarers were onboard beyond the expiration of their contracts, and 1.0% were onboard for over 11 months. The figures were 8.9 and 1.2% respectively in the September 2021 report, indicating that the crew change crisis had eased from 15 August to 15 September 2021.

2.3.2 COVID-19 vaccine program for seafarers. Since the onset of the COVID-19 pandemic, the global pharmaceutical industry has begun developing vaccines to combat the virus. By late 2020, several vaccines had been granted EUA (Emergency Use Authorization) or similar licenses by respective governments, even though none of these had gone through the full course of efficacy and safety test procedures, which normally takes several years. Subsequent reports have confirmed that several brands of COVID-19 vaccines are effective in preventing the spreading of COVID-19.

To counteract global travel restrictions, shipping companies started to hire only vaccinated seafarers, prompting countries that supply seafarers to vaccinate them as a priority. However, many seafarers who are stranded on ships, and others waiting to go onboard are still waiting to get vaccinated (Marine Insight, 2021). In May 2021, International Chamber of Shipping (ICS) published a roadmap for stakeholders, including shipping companies, state/port/health authorities, etc., for the planning and implementation of vaccination programs for seafarers (ICS, 2021).

NDCCI October report shows that as of 15th September 2021, 31.1% of the 90,000 seafarers of the 10 stakeholders were fully vaccinated. Although the figure is a 9.2% increase from 15th August 2021, it does not reflect the real status of the vaccination program for all seafarers. First, the rate is much lower than the rates of most affluent countries such as European Union (72.6%), United Kingdom (67.1%), Singapore (79%), and the United States

(55%). Second, the samples were taken from the 10 leading ship managers whose organizations would naturally care more about the well-being of the seafarers. For the remaining 94.5% of seafarers who are not included in NDCCI, the vaccination rate is very likely much lower. Third, the vaccination rates are unevenly distributed across the countries. While affluent countries offer vaccines to foreign seafarers, many countries that supply seafarers, such as Philippines, India, Bangladesh, Indonesia, etc., do not have enough vaccines for all their citizens including seafarers (WHO, 2021b; Subramanian, 2021).

2.3.3 Key worker status for seafarers. Maritime transport is often dubbed the backbone of global trade. It is responsible for over 80% by volume, and over 70% by value, of global merchandise trade, and delivers essential food, energy, raw materials, manufactured goods, and components for all countries. It can be said that seafarers play a major role in keeping this backbone of global trade open, and this role is more crucial in the COVID-19 pandemic (UNCTAD, 2021).

Recognizing the impact of COVID-19 on seafarers and the important role they play, global stakeholders, including United Nations (UN), ICS, ITF, International Labour Organization (ILO), International Maritime Organization (IMO), etc., have advocated for seafarers to be designated as “key workers”, in the same rank as medical workers or others whose work is essential for the whole population. With the status of the key worker, seafarers will be allowed to pass through “safe corridors” in airports when transiting to or from their ships, and they will be placed on a higher priority list for COVID-19 vaccinations. Furthermore, this recognition can ease the mental distress that many seafarers are suffering from the COVID-19 pandemic (UN, 2020; Hollinger *et al.*, 2020).

3. Methodology

This study consists of three parts to answer study questions 1–2 as listed in Section 1.

First, a review of literature about the well-being and mental health of seafarers before and during the COVID-19 pandemic, and the impact of COVID-19 on the seafarers. The review covers studies, reports, policies, news, declarations, discussion papers, etc. from global organizations, researchers, media, etc., for the well-being of the seafarers from pre-pandemic to October 2021.

Second, a questionnaire survey was conducted with the support from the ship managers of 4 shipping companies in Taiwan, to request the ship officers to fill out questionnaires on the mental health of the seafarers whose contracts had expired during the pandemic.

Third, the returned questionnaires were analyzed with Statistical Package for the Social Sciences (SPSS) V26.0, to examine correlations between the stranded seafarers’ distress levels and factors including COVID-19 infection case reports, ship types, ship routes, seafarers’ circumstances, etc.

Since this study was not a comprehensive psychological assessment as had been done in several studies before and during the COVID-19 pandemic, it was decided to request the officers on ships complete the questionnaires and return them to the companies with minimum delay. While ship officers do not qualify as psychologists or medical staff, they can provide supervisory observations. A total of 749 seafarers from 48 ships, 110 (15%) questionnaires from 21 ships were returned and used to extrapolate the mental distress of the stranded seafarers in the COVID-19 pandemic.

4. Results and discussion

4.1 Guidelines and practices for the seafarers in the COVID-19 pandemic

Soon after COVID-19 became a pandemic, WHO issued an interim guidance, “Operational considerations for managing COVID-19 cases or outbreaks on board ships”, laying out management topics for outbreaks of COVID-19 on ships, including ship-shore separation, managing a suspected case on board, contact tracing, cleaning and disinfection,

communication plans, etc (WHO, 2020). Other international stakeholders, including IMO, ILO, ICS, ITF, etc., have also published guidelines, discussion papers, etc. on the topics of seafarers and the COVID-19 pandemic.

The shipping companies generally regulate that the seafarers keep social distancing, maintain personal hygiene, clean and disinfect the surroundings, prohibit visitors, and practice self-isolation when the ships are in ports, etc. While guidelines are intended to reduce risks of the seafarers contracting COVID-19, they are most restrictive and impose additional tasks to the seafarers' routine work.

4.2 Survey results on mental distress of the stranded seafarers in the COVID-19 pandemic

Four of Taiwan's key shipping companies participated in this study, and the survey covered only ships that are self-owned and self-operated but not chartered ones. With support from the companies, questionnaires were sent by email to ship officers onboard to fill out for seafarers whose contracts had expired but could not leave due to crew change difficulties. Appendix shows the questionnaire for the mental status of seafarers whose contracts have expired.

4.2.1 The shipping companies. To comply with non-disclosure agreements (NDA), the companies who participated in the survey are referred to as Companies A, B, C, and D. Table 1 lists the profiles of Companies A–D.

Company A owns a fleet of 48 ships, including Panamax, Capesize, and Supramax bulk carriers, concrete carriers, and LPG carriers, totaling 6.66 m DWT.

Company B ranks as one of the top eight shipping companies globally and focuses on a fleet of container ships only.

Company C also ranks as one of the top eight shipping companies globally and owns many types of ships. It was agreed that their fleet of over 90 container ships is the subject of this study.

Company D owns a fleet of 51 ships, including chemical/oil tankers, Very Large Crude carriers, and LNG carriers, Handy, Panamax, Capesize, and Container ships.

The four companies cover all major ship types that navigate through fixed and non-fixed shipping routes, with seafarers from China, Philippines, Taiwan, Burma, and other countries.

Company	A	B	C	D
No. of ships owned	48	About 110	90	51
Ship type	Capesize, Panamax, Supramax, Cement carrier, Oil tanker	Container	Container	Capesize, Panamax, Handy, VLCC, Chemical/Oil tanker, LPG, container
On board crew no	796	About 2,400	About 2,000	Confidential
COVID-19 guidelines for ships	WHO guidance (March 2020); guidelines from port authorities; company procedures			
Practice to counteract difficulty in crew change and repatriation	a. Stay bonus b. Employ more Chinese crews c. Additional port calls for crew changes	a. Stay bonus b. Increase satellite communication time c. Increase food allowance d. Explanation on difficulties for crew change	a. More policy advocacy and care for the crew b. Additional ports calls for crew change	a. Stay bonus b. Performance rewards to senior officers c. Increase satellite communications time d. Employ more Chinese crews

Table 1.
Profiles and practices
for COVID-19
pandemic of
Companies A,
B, C and D

To improve the seafarers' morale, Companies A–D offer the following rewards, bonuses, and benefits: first, stay bonus for seafarers whose leaves are delayed (A, B, D); second, extra rewards for officers who maintain work standards (D); third, satellite Internet upgrades for more time to contact family and friends (B, D); fourth, increased food allowance (B); fifth, deviating from the cargo route to allow crew changes (A); and sixth, extra port stays by ships so the seafarers can be repatriated (C).

4.2.2 *Background of the seafarers.* The survey covered May 2020–September 2020 and collected 110 (15%) valid questionnaires from 21 ships out of a total of 749 seafarers from 48 ships. The contract expired days ranged from 17 to 293 days, and total days on board ranged from 227 to 537 days Table 2(a) shows the background of the respondents in terms of ship type, rank, age, contract expired days, and total onboard days.

(a) Seafarers' background		<i>n</i>	%	
Respondent no. (total crew no.: 749)		110	15	
Ship no. (total ship no.: 48)		21	44	
Ship type	Capesize	12	11	
	Panamax	58	53	
	Supramax	40	36	
	Cement carrier	0	0	
	Oil tanker	0	0	
	Rank	1	1	
	Master	1	1	
	Chief officer	7	6	
	Second officer	9	8	
	Third officer	0	0	
	Chief engineer	6	5	
	First engineer	0	0	
	Second engineer	8	7	
	Third engineer	5	5	
	Fourth engineer	5	5	
	Engineer trainee	4	4	
	Boson	5	5	
	Carpenter	5	5	
	Able seaman	20	18	
	Original seaman	1	1	
	Deck cadet	8	7	
	Fitter	5	5	
	Engine cadet	8	7	
	Chief cook	7	6	
	Second cook	6	5	
			Range	<i>M</i>
Age		21 – 58	33.7	8.339
Contract expired days		–17 – 293	153.6	82.895
Total Onboard days		227 – 537	394.8	81.830

Table 2. (a) Background of the seafarers whose contracts have expired, and (b) product-moment correlation analysis for the mental distress variables

(b) Product-moment correlation analysis				
Variable	Scale range	1	2	3
1. Anxiety (ANX)	1–5: Slightly serious/strong ~ extremely serious/strong	—		
2. Repatriation expectation (RepEx)		0.48***	—	
3. Negative impact on work performance (NegWP)		0.77***	0.36***	—
Mean		1.58	2.42	1.56
Standard deviation		1.017	1.371	0.934

4.2.3 Mental distress of the stranded seafarers. With a Likert-scale score of 1–5 (slightly serious/strong to extremely serious/strong), the results of a product moment correlation analysis using the SPSS software on the three factors, anxiety (ANX), repatriation expectation (RepEx), and negative impact on work performance (NegWP), are listed on [Table 2\(b\)](#). The correlation coefficient, $r(108)$, for factor pairs ANX and RepEx (0.48), ANX and NegWP (0.77), and RepEx and NegWP (0.36) are all positively correlated with $p < 0.001$ (represented by three asterisks, “***”), meaning that the probability of each of the 3 pairs of factors not strongly correlated with each other is less than 0.1%. Therefore, ANX and RepEx are strongly correlated, so are ANX and NegWP, and RepEx and NewWP. Furthermore, the mean scores and standard deviation for RepEx (2.42/1.371) is higher than those of ANX (1.58/1.017) and NegWP (1.56/0.934), indicating that the officers gave lower scores for questions related to anxiety and to the negative impact on work performance, and higher scores for the seafarers’ expectation for repatriation.

4.2.4 Factors affecting mental distress of the stranded seafarers. The returned questionnaires were analyzed against five factors: COVID-19 infection case reports, ship type, role and rank on ship, age, and contract expired days, and the observations are as 1–5 below:

(1) COVID-19 infection case reports

[Figure 1\(a and b\)](#) show daily COVID-19 infection case report in ten countries: China, Italy, Iran, Korea, Spain, Germany, France, UK, Turkey, and Canada. There are two peaks in most of these countries: early April 2020, and mid-August to September 2020.

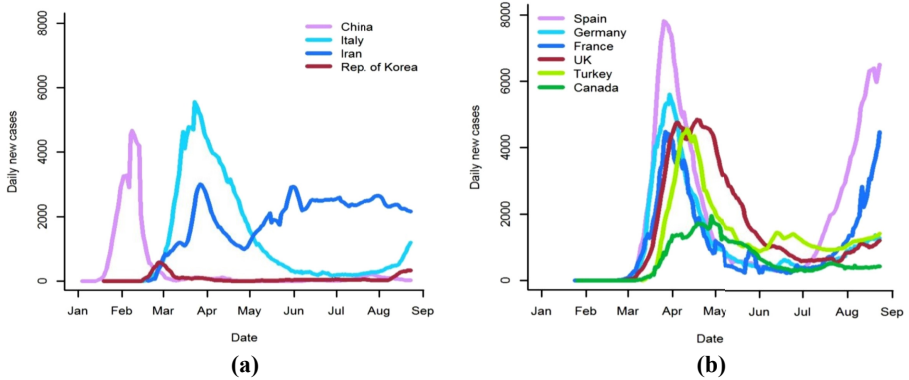
[Figure 1c](#) shows a graph of the seafarers’ scores for the mental distress factor, Anxiety, for the dates from April to November 2020. There are two peaks in the subtotal graph (light blue): May 2020 (60), and mid-September 2020 (72).

Comparing [Figure 1\(a–c\)](#), it can be observed that the peaks for the seafarers’ anxiety level in May and mid-September, 2020 coincide closely with the peaks of COVID-19 infection case reports in the ten countries.

(2) Ship type

The top part of [Table 3](#) shows results of mean and standard deviation in variables of ANX and NegWP by different ship types: Capesize, Panamax, and Supramax. The mean score of ANX for the Panamax ship type, 1.97, is higher than 1.25 for Capesize, and 1.13 for Supramax, indicating that anxiety scores are higher for seafarers whose contracts have expired on Panamax ships compared with seafarers whose contracts have expired on Capesize and Suprmax ship types. A shipping manager of company A offered a hypothesis for this result: as Panamax ships pass Panama Canal, spend less time at sea and visit more ports, the seafarers are confronted with more tasks, more restrictions on port stays, and more risks of contracting COVID-19, therefore they are relatively more anxious.

The lower part of [Table 3](#) shows an ANOVA analysis of ANX and NegWP by different ship types. The F value for ANX, $F(2,107) = 10.30$, which is much greater than 1, indicating that the null hypothesis that there are no significant variances in ANX among the groups of Panamax, Capesize, and Suprmax can be rejected, i.e. there are significant variances in ANX among the groups. Similarly, NegWP the $F(2,107) = 6.08$, which is greater than 1, indicating that there are significant variances in NegWP among the groups. For both factors of ANX and NegWP, the p -value is near zero, indicating that the results are statistically significant. The ω^2 values (0.146, 0.085) indicate that the strengths of the association are high, and the power, $1-\beta$ (0.985, 0.878) are close to 1, indicating that the probabilities that there are no variances among the groups of ship types are very small ([Kirk, 1995](#); [Murphy and Myers, 2004](#)).



Source(s): World Health Organization, Coronavirus Disease (COVID-19) Dashboard at <https://covid-19.who.int/>

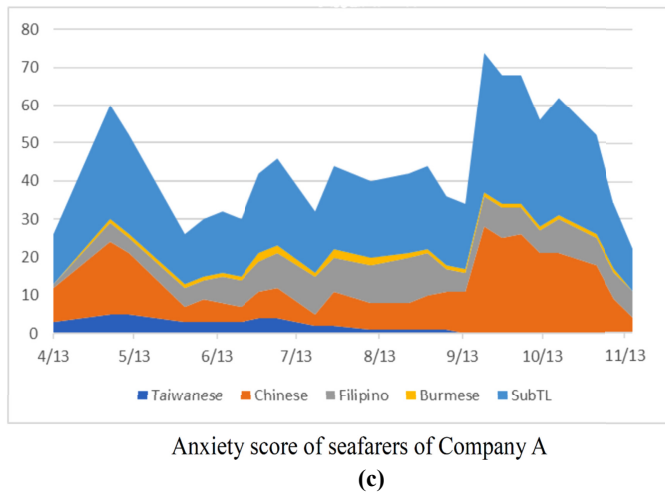


Figure 1.
(a), (b) COVID-19 rate for 10 key countries, and (c) Anxiety score of seafarers

(3) Role and rank on ships

Analysis of Anxiety and NegWP factors shows that there is no identifiable difference between seafarers working in the engine section and those in the deck section, nor is there a significant difference between officer seafarers and supporting crews.

(4) Age

There is no significant difference among seafarers of different ages in the results for factors of Anxiety and NegWP.

(5) Contract expired days

There is no significant difference among seafarers of different contract expired days in the results for factors of Anxiety and NegWP.

In addition to differences due to the seafarers' background, the survey results show that the factor RepEx (Repatriation Expectation) has strong correlations with ANX and NegWP. Reasons

Table 3. ANX, NegWP variations and ANOVA analysis by ship type

Variable	Capesize (n = 12)			Panamax (n = 58)			Supramax (n = 40)		
	M (SD)	95% CI		M (SD)	95% CI		M (SD)	95% CI	
		LL	UL		LL	UL		LL	UL
ANX	1.25 (0.452)	0.96	1.54	1.97 (1.23)	1.64	2.29	1.13 (0.404)	1.00	1.25
NegWP	1.25 (0.452)	0.96	1.54	1.84 (1.11)	1.55	2.14	1.25 (0.588)	1.06	1.44

Variable	Source of variation	SS	df	MS	F	p	Unplanned comparison	ω^2	1- β
ANX	Between groups	18.21	2	9.10	10.30**	0.000	Panamax > Capesize and Supramax	0.146	0.985
	Within groups	94.56	107	0.884					
	Total	112.76	109						
NegWP	Between groups	9.71	2	4.85	6.08*	0.003	Panamax > Capesize and Supramax	0.085	0.878
	Within groups	85.35	107	0.798					
	Total	95.06	109						

Note(s): ** $p < 0.001$; * $p < 0.05$

for RepEx provided by the respondents include personal health (15), family or girl/boyfriends (15), career plan (4), household economy (2), and no answer (71). A number of seafarers further indicated that they would not consider returning to seafaring jobs after the repatriation.

4.2.5 Infection cases onboard. Similar to low infection rates in Taiwan throughout the pandemic, there were only 5 reported infections among the self-managed fleets of companies A~D. This confirms that the guidelines and practices that the companies implemented soon after the COVID-19 pandemic had been most effective. Comparatively, three of the four shipping companies reported infections and even death on their chartered ships, including Company B: a ship captain died of COVID-19 infection while on a voyage; Company C: several Indonesian crews were infected while the ship stayed in Hong Kong; and Company D: several Indian crews were infected while the ship was in Indian ports.

5. Conclusion and recommendations

5.1 Conclusion

Since COVID-19 was declared a pandemic in March 2020, it has infected more than 249 million people, including nearly 5.04 million deaths by the end of October 2021. In addition to physical and mental casualties, many countries suffered unprecedented economic losses due to the severely disrupted free flow of people and goods. Like most industries, the shipping industry had been caught unprepared by the upheavals. In addition to the challenges of disruptions to port operations and ship schedules, the restrictions on international travel have made crew changes and repatriations extremely difficult and expensive.

The answers to four study questions 1–4 as listed in Section 1, are as below:

- (1) The guidelines and procedures provided by the participating shipping companies on their fleets are effective in protecting the seafarers onboard, as the results of few infections attest.
- (2) Seafarers suffer more mental distress symptoms than the general population before the COVID-19 pandemic, and their mental distress levels have worsened further since, due to (a) crew change crisis; (b) extra workloads; (c) fear; and (d) being treated as potential virus carriers.

- (3) As shown in [Section 4.2](#), the correlation analysis of the returned questionnaires concluded that Anxiety (ANX), repatriation expectation (RepEX), and negative impact on work performance (NegWP) are closely interrelated, and repatriation expectation is the biggest concern of all. Furthermore, factors affecting the distress levels include COVID-19 infection case reports and ship types.
- (4) The key issues causing mental distress in the seafarers are crew changes, vaccination rates, and the key worker status. Despite the efforts from the global stakeholders to advocate for these issues, more is required to support the seafarers, whether or not they are stranded, to survive and thrive beyond the pandemic.

5.2 Recommendations for shipping companies

While the COVID-19 pandemic has caused major upheavals for the shipping industry, there is an underlying silver lining – since Q4 2020, global trade had bounced back, prompting freight hikes and improving profitability for the shipping companies who have the right kind of ships on the right kind of routes, and a stable and reliable workforce of seafarers ([WTO, 2021](#)).

Below is a list of measures that shipping companies can take to alleviate the mental distress of seafarers and to ensure that they return to ships after their leaves:

- (1) Support seafarers by recognizing their contributions to the global trade and humanity and treat them as “key workers”.
- (2) Strive for early resolution of the crew changes and repatriations crisis.
- (3) Improve remuneration for seafarers to make seafaring careers more attractive, especially when the profitability improves due to freight hikes.
- (4) Enhance seafarers’ career options and provide opportunities for promotions.
- (5) Support seafarers to be vaccinated as early as possible. This will not only keep the seafarers safe, but also enable them to travel freely for crew change purposes, and avoid unnecessary expenses if they get infected.
- (6) Reward seafarers for overstaying after the contracts expire, and support those who cannot get on board due to travel restrictions. An easy way to justify this is to weigh up the costs if the seafarers were not available to overstay or to go on ships.
- (7) Enhance facilities for telemedical assistance at sea, and training for officers to provide better support for seafarers who suffer from mental distress or physical sicknesses.
- (8) Enhance seafarers’ training on leadership skills, teamwork skills, EQ management, effective communications, safety procedures, etc.
- (9) Enhance communication, entertainment, and food on ships. These aspects are taken for granted by people onshore but not by the seafarers ([Sampson and Ellio, 2019](#)).

These measures will help the shipping companies to lessen the impacts of the COVID-19 pandemic on the seafarers and to retain talents for their fleets. Ultimately, vocational skills such as leadership, teamwork coordination, effective communications, languages, etc. that seafarers acquire through their careers are the talents that many industries seek after.

5.3 Recommendations for seafarers

COVID-19 is a relatively new disease, and the effects, vaccines, cures, etc., are not yet fully studied or developed. The seafarers can take the following measures to ensure that they will survive the pandemic and thrive to a prosperous future:

- (1) Follow the development and take directives from trusted authorities and medical experts to protect themselves and others from contracting the disease.
- (2) Get fully vaccinated as soon as possible. It has been proven that vaccines are effective in preventing infections, hospitalizations, and deaths. Besides, vaccination has become a prerequisite for traveling across borders.
- (3) Be conscious of negative emotions such as anxiety, stress, depression, anger, etc. Seek counsel from medical experts, or support from superiors or colleagues, instead of fighting the emotions alone.
- (4) Work diligently to achieve vocational goals in the shipping careers. The shipping companies need reliable and talented seafarers, and no superiors or managers would bypass or ignore good performers for opportunities and promotions.

It has been predicted that the COVID-19 pandemic will not be over until the majority of the population are vaccinated, and when effective medicine and cures are available rendering COVID-19 a non-lethal disease like common influenza. In the interim, there will still be challenges in the shipping industry, and seafarers need to protect themselves and prepare for the time when their lives return to normal.

5.4 Further studies

The questionnaire survey was conducted in mid-2020 when the “crew change crisis” was most serious. While the survey in this study reflected the anxiety level of the stranded seafarers, the sample size of 110 and the timing can be extended for a larger scale study, and to cover the more recent developments on vaccine, outbreaks, and the responses of organizations and governments for the of COVID-19 pandemic.

References

- Asmundson, G. and Taylor, S. (2020), “How health anxiety influences responses to viral outbreaks like COVID-19: what all decision-makers, health authorities, and health care professionals need to know”, *Journal of Anxiety Disorders*, Vol. 71 No. 102211, doi: [10.1016/j.janxdis.2020.102211](https://doi.org/10.1016/j.janxdis.2020.102211).
- Battineni, G., Kumar, S., Mittal, M. and Amenta, F. (2021), “COVID-19 vaccine on board ships: current and future implications of seafarers”, *International Maritime Health*, Vol. 72 No. 1, pp. pp76-77.
- Centers for Disease Control and Prevention (2021), “Well-being concepts”, available at: <https://www.cdc.gov/hrqol/wellbeing.htm>.
- Chamorro-Premuzic, T., Ahmetoglu, G. and Furnham, A. (2008), “Little more than personality: dispositional determinants of test anxiety”, *Learning and Individual Differences*, Vol. 18, pp. 258-263.
- Davison, G.C., Blankstein, K.R., Flett, G.L. and Neale, J.M. (2008), *Abnormal Psychology*, Wiley, Toronto, p. 154.
- Frey, B.S. and Stutzer, A. (2002), *Happiness and Economics*, Princeton University Press, Princeton, NJ.
- Global Maritime Forum (2021), “The Neptune declaration crew change indicator October 2021”, available at: <https://www.globalmaritimeforum.org/content/2021/09/Neptune-Declaration-Crew-Change-Indicator-October-2021.pdf>.
- Gobind, A.J. (2018), “Transport anxiety and work performance”, *SA Journal of Human Resource Management*, Vol. 16 No. 1, pp. 1-7.
- Hewlett, E., Takino, S., Nishina, Y. and Prinz, C. (2021), *Tackling the Mental Health Impact of the COVID-19 Crisis: an Integrated, Whole-Of-Society Response*, OECD Publishing, Paris, available

- at: <https://www.oecd.org/coronavirus/policy-responses/tackling-the-mental-health-impact-of-the-covid-19-crisis-an-integrated-whole-of-society-response-0cca0b/>.
- Hollinger, P., Wright, R. and Pooler, M. (2020), "Shipping industry warns of trade logjam as crews remain stranded", *Financial Times*, available at: https://www.ifsma.org/resources/Shipping-industry-warns-of-trade-logjam-as-crews-remain-stranded_-Financial-Times.pdf.
- Humphreys, M.S. and Revelle, W. (1984), "Personality, motivation, and performance: a theory of the relationship between individual differences and information processing", *Psychological Review*, No. 91, pp. 153-184.
- International Chamber of Shipping (2021), *Coronavirus (COVID-19) Roadmap for Vaccination of International Seafarer, Version 1.0-May 2021*, ICS, London, available at: <https://www.ics-shipping.org/publication/coronavirus-covid-19-roadmap-for-vaccination-of-international-seafarers/>.
- International Labour Organization (2006), *The Maritime Labour Convention 2004, Incorporating Amendments in 2014 and 2016, Regulation 2.4*, ITF, London.
- International Labour Organization (2021), *Information Note on Maritime Labour Issues and Coronavirus (COVID-19), Revised Version 3.0*, ILO, Geneva, available at: https://www.ilo.org/global/standards/maritime-labour-convention/WCMS_741024/lang-en/index.htm.
- Iversen, R.T.B. (2012), "The mental health of seafarers", *International Maritime Health*, Vol. 63 No. 2, pp. 78-89.
- Kirk, R.E. (1995), *Experimental Design: Procedures for the Behavioral Science*, SAGE Publications, Thousand Oaks, CA.
- Lefkowitz, R.Y. and Slade, M.D. (2019), *Seafarer Mental Health Study*, ITF Seafarers' Trust, London, available at: https://seafarerstrust.org/sites/default/files/node/publications/files/ST_MentalHealthReport_Final_Digital-1.pdf.
- Marine Insight (2021), "Indian seafarers lose out employment opportunities over delayed vaccination", *MI News Network*, available at: <https://www.marineinsight.com/shipping-news/indian-seafarers-lose-out-employment-opportunities-over-delayed-vaccination/> (accessed 18 May 2021).
- Murphy, K.R. and Myers, B. (2004), *Statistical Power Analysis: A Simple and General Model for Traditional and Modern Hypothesis Tests*, 2nd ed., Lawrence Erlbaum Associates, NJ.
- Niknamian, S. (2019), "The impact of stress, anxiety, fear and depression in the cause of cancer in humans", *American Journal of Biomedical Science and Research*, Vol. 3 No. 4, pp. 363-370, doi: [10.34297/AJBSR.MS.IS.2019.03.000696](https://doi.org/10.34297/AJBSR.MS.IS.2019.03.000696).
- Oldenburg, M., Baur, X. and Schlaich, C. (2010), "Occupational risks and challenges of seafaring", *Journal of Occupational Health*, Vol. 52 No. 5, pp. 249-256.
- Sagaro, G.G. and Amenta, F. (2020), "Past, present, and future perspectives of telemedical assistance at sea: a systematic review", *International Maritime Health*, Vol. 71 No. 2, pp. 97-104.
- Sampson, H. and Ellio, N. (2019), *Seafarers' Mental Health and Wellbeing*, Institute of Occupational Safety and Health, Leicestershire, available at: <https://iosh.com/media/6306/seafarers-mental-health-wellbeing-full-report.pdf>.
- Sarason, I.G. (1984), "Stress, anxiety and cognitive interference: reactions to tests", *Journal of Personality and Social Psychology*, Vol. 46 No. 4, pp. 929-938.
- Seligman, M.E.P., Walker, E.F. and Rosenhan, D.L. (2000), *Abnormal Psychology*, 4th ed., W.W. Norton & Company, NY.
- Subramanian, S. (2021), *Seafarers from Covid-Hit India Are Struggling to Get on Ships-And off Them*, Quartz Media, New York, available at: <https://qz.com/2020528/indias-seafarers-why-these-essential-workers-are-all-at-sea/>.
- United Nations Conference on Trade and Development (2021), "COVID-19 and Maritime transport: impact and responses", Transport and Trade Facilitation Series, No. 15, available at: <https://unctad.org/webflyer/covid-19-and-maritime-transport-impact-and-responses>.

United Nations General Assembly (2020), “International cooperation to address challenges faced by seafarers as a result of the COVID-19 pandemic to support global supply chains”, A/75/L.37,2020, available at: <https://www.undocs.org/en/A/75/L.37>.

World Health Organization (2020), “Operational considerations for managing COVID-19 cases or outbreaks on board ships”, WHO Interim Guidance, Geneva, WHO/2019-nCoV/Ships/2020.2 (accessed 25 March 2020).

World Health Organization (2021a), “WHO coronavirus (COVID-19) dashboard”, available at: <https://covid19.who.int/>.

World Health Organization (2021b), *COVID-19 Weekly Epidemiological Update*, Ed.46, WHO, Geneva, available at: <https://www.who.int/publications/m/item/weekly-epidemiological-update-on-covid-19—29-june-2021>.

World Trade Organization (2021), “World trade primed for strong but uneven recovery after COVID-19 pandemic shock”, WTO PRESS/876, available at: https://www.wto.org/english/news_e/pres21_e/pr876_e.htm.

Appendix

Questionnaire for mental status of seafarers whose contracts are expired but cannot take leaves

Name of ship: _____ Date: ____/____/____

The seafarer’s name: _____ Rank: _____

Nationality: _____ Age: _____

Days contract expired: _____ Days on board: _____

Has the seafarer shown symptoms of anxiety? ____Y / N____

If you answer Y above, answer questions below:

1. How serious are the symptoms of anxiety? ____
(1 slightly serious, 2 somewhat serious, 3 serious, 4 very serious, 5 extremely serious)
Reason for your selection: _____
2. How strong is the seafarer’s expectation for repatriation? ____
(1 slightly strong, 2 somewhat strong, 3 strong, 4 very strong, 5 extremely strong)
Reason for your selection: _____
3. How serious is the seafarer’s work performance affected by the symptoms? ____
(1 slightly serious, 2 somewhat serious, 3 serious, 4 very serious, 5 extremely serious)
Reason for your selection: _____

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