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**GLOBAL BURDEN OF PANDEMICS & ITS CHALLENGES TO
SEAFARERS ON MERCHANT SHIPS**

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GLOBAL BURDEN OF PANDEMICS & ITS CHALLENGES TO SEAFARERS ON MERCHANT SHIPS

Mr Nitesh Kumar Sirohi,¹ Dr. Aprajita Bhardwaj² & Dr. M. Sekar³

Abstract

The outbreak of pandemics poses significant challenges to seafarers serving on merchant ships. In recent years emerging viruses like Ebola, Nipah, and COVID-19 have continued to pose risks to the maritime community particularly seafarers sailing on worldwide vessels. This paper provides a historical overview of pandemics and their impact on seafarers, highlighting the evolution of disease prevention measures on ships. It then focuses on the recent COVID-19 pandemic and its repercussions. The paper reports on the research findings which concern social, emotional, physical and work-related aspects of seafarers during the COVID-19 pandemic. This research paper also contributes to highlighting the often-overlooked historical impact of pandemics on seafarers for centuries.

Keywords: *Maritime, Mental Health, Pandemics, Psychosocial, Resilience, Seafarers, Social Isolation, Well-being*

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SECTION -1

1. INTRODUCTION:

Pandemics have emerged as one of the most significant global challenges of the 21st century, affecting populations, economies, and various sectors, including the maritime industry (Ibn-Mohammed et al., 2021; Notteboom et al., 2021). The outbreak of infectious diseases, such as COVID-19, has not only posed immense threats to public health but has also exposed vulnerabilities within essential sectors, including the shipping industry (Panahi et al., 2022). Seafarers serving on merchant ships represent a vital workforce responsible for the transportation of goods and commodities across international waters (Borovnik, 2022). However, the nature of their work exposes them to unique challenges and risks during pandemics, ranging from restricted access to healthcare services to prolonged periods of isolation at sea (Shan, 2022). This paper aims to explore the specific challenges faced by seafarers on merchant ships during pandemics, highlighting their implications for mental health, physical well-being, and overall work dynamics. By addressing this gap in the literature, the research seeks to provide valuable insights into the needs of seafarers and propose strategies to enhance their resilience and well-being amidst global health crises.

Throughout human history, seafarers have faced a multitude of pandemics and diseases, resulting in significant mortality and morbidity (Brown, 2011; Haines et al., 1996). From the devastating impact of scurvy in the 15th to 18th centuries to the widespread outbreaks of typhoid fever, yellow fever, and cholera in the 19th and 20th centuries, maritime voyages have been plagued by infectious diseases (Goethe et al., 2012; Tulchinsky & Varavikova, 2014). While modern medicine has significantly reduced the impact of many traditional threats, emerging diseases like Ebola, Nipah, and the COVID-19 virus continue to pose risks (Mercer, 2021; Sridhar, 2022), particularly to seafarers sailing worldwide on vessels. The globalized nature of shipping further complicates the issue, requiring robust public health measures to protect this essential workforce. **Table A** gives a birds-eye view of the history concerning the increasing global burden of pandemics & its impacts on seafarers:

Table A: A birds-eye view of the history concerning the increasing global burden of pandemics & its impacts on seafarers

Pandemic/Disease	Year of Occurrence	Impact on Seafarers
Columbus's Transatlantic Voyage	1492	Many Seafarers died from diseases like dysentery, malaria, and scurvy (Brown, 2011; Petriello, 2023).
Vasco da Gama's Voyage	1497-1499	A significant number of Seafarers died from disease, particularly scurvy, during the voyage (McCord, 1959).
Ferdinand Magellan's Circumnavigation	1519-1522	Magellan's expedition lost a significant portion of its crew to disease, emphasizing the challenges of long sea voyages (Kelsey, 2016; Pigafetta, 2012).
Scurvy	15th - 18th centuries	Estimated to have killed over one million Seafarers due to vitamin C deficiency (Barker, 1992).
Typhoid Fever	Throughout history	A major cause of death among Seafarers on long voyages, particularly in the 19th century (Haines & Shlomowitz, 1998).
Yellow Fever	17th - 19th centuries	Devastated Seafarers on voyages to the Caribbean and Africa, leading to significant mortality. (Blake, 1968; Lee, 1998; Rodhain, 2022)
Cholera	19th - 20th centuries	Spread rapidly on ships, causing widespread outbreaks and deaths among seafarers (Evans, 1988).
Malaria	Throughout history	A major health threat for Seafarers in tropical regions, contributing to significant morbidity and mortality (Idnani & Kotłowski, 2011).
Herpes Virus	Throughout history	Herpes virus infections can lead to fatigue, sores, and other symptoms that can impact a seafarer's ability to work (WHO, 1986).
The Panama Canal Construction	1904-1914	The French attempt to build the canal in the late 19th century was largely abandoned due to disease, highlighting the impact of pandemics on large-scale port projects (Aboul-Enein, 2009; Rhoads, 2012).
Ebola Virus	Outbreaks since 1976	The Ebola outbreak in 2014-2016 in West Africa disrupted shipping operations and posed a health risk to seafarers. (Goodman et al., 2021; Qureshi, 2016).
HIV Virus	Outbreaks since the 1980s	HIV/AIDS has impacted the health and well-being of seafarers worldwide, requiring

		increased awareness and prevention efforts. (Chowdhury et al., 2016; Dhar & Timmins 1991).
Nipah Virus	Outbreaks since 1999	Nipah virus outbreaks in Southeast Asia have posed a threat to seafarers, particularly those working in affected regions (Nayak et al., 2020; WHO,2005).
COVID-19 Pandemic	2020 - Present	While precise figures are difficult to obtain, the pandemic has significantly impacted seafarers, leading to delayed crew changes, isolation, and mental health challenges including post-pandemic deaths & health side effects.

Table A, provides the history of disease prevention on ships and reflects a gradual evolution from rudimentary practices to sophisticated, science-based measures. Early efforts, dating back to the 15th-19th centuries, primarily relied on quarantine, aeration, and religious practices (Harrison, 2013). While quarantine aimed to isolate infected ships, its effectiveness was often compromised by short durations and lax enforcement (Iteraera, 2009). Aeration, involving opening hatches and ports for fresh air circulation, was a common practice (Foxhall, 2018), though its efficacy in preventing disease transmission remains debatable. Religious practices, including prayer and rituals, played a significant role in some seafarers' belief systems, offering a sense of comfort and protection against disease (Magra,2007; Newman,1998).

The 20th and 21st centuries witnessed a paradigm shift in disease prevention on ships, driven by scientific advancements and international collaboration. The establishment of the World Health Organization (WHO) International Health Regulations, legally binding on 196 countries, marked a significant step towards standardized global health measures. Improved hygiene practices, informed by the germ theory, became paramount, emphasizing handwashing, surface disinfection, and isolation of sick individuals. Vaccination, a cornerstone of public health, played a pivotal role in reducing mortality rates from diseases like smallpox and yellow fever (Hajj Hussein et al.,2015; Montero et al.,2024). The understanding of the importance of vitamin C led to the inclusion of citrus fruits in seafarers' diets, effectively preventing scurvy. Medical advancements, including the development of antibiotics, revolutionized the treatment of infectious diseases, significantly controlling their spread.

The evolution of disease prevention on ships demonstrates the continuous progress made in understanding and mitigating the global burden of pandemics on seafarers. While modern practices, guided by international regulations and scientific advancements, have significantly reduced the risk of disease outbreaks on ships and improved the medical health of seafarers worldwide still there is room to work on the psychological aspect of human health, especially on merchant ships. The recent COVID-19 pandemic highlighted the need for continued research to address the issues of psychological safety at sea and the well-being of seafarers in the face of future pandemics.

2. The COVID -19 Pandemic and its Challenges

The global burden of pandemics & its challenges to seafarers on merchant ships can be revisited & systematically studied in light of the recent COVID-19 pandemic which has significantly impacted the maritime industry and seafarers' well-being from late 2019 through 2023. The initial identification of the virus in China in December 2019 led to the World Health Organization (WHO) issuing technical guidelines for detecting and managing cases of pneumonia, later identified as Novel Coronavirus. By January 2020, the WHO declared the coronavirus outbreak a Public Health Emergency of International Concern (PHEIC), highlighting the global threat. The quarantine of the cruise vessel Diamond Princess in Japan in February 2020 further underscored the global spread of the virus & grappling of the maritime industry within it (Nakazawa et al., 2020). The WHO named the pandemic disease as COVID-19 in March 2020. Thereafter, Stringent measures such as the lockdowns and extended quarantine periods by different countries affected the maritime industry and its operations causing massive crew change disruptions and port closure. The ITF Seafarers' Trust declared the setting up of an emergency fund as early as in March 2020 aimed at helping seafarers and their families affected by the COVID-19 pandemic (Mukesh, 2020). In 2021 and 2022, the effects of the pandemic on the maritime industry remained dynamic and changing, with massive seafarers' vaccination drives in focus. The maritime industry up to 2023 was affected by the COVID-19 pandemic and the corresponding problems such as a global shortage of fresh recruits on certain ranks & cadre are even seen in 2024. Although the outbreak's effects had been mitigated somewhat in some areas however the adverse psychological consequences of the pandemic remained within each one of us. Among seafarers, problems surrounding shore leave, medical services, and supplies, which resulted in fatigue and stress along with mental health issues (Brooks & Greenberg, 2022) are well

acknowledged. COVID-19 has established seafarer well-being as an important topic of discussion within the maritime arena and demanded enhanced working standards over and above the basic MLC 2006 set bottom line. The pandemic accelerated the adoption of digitalization and automation in the maritime industry, which helped to improve efficiency, reduce the need for physical contact, and enhance safety (Alamoush et al., 2022; Carballo Piñeiro et al., 2021). The maritime industry is likely to continue to face challenges related to the pandemic's long-term effects, but it is also poised for growth and innovation. The focus on seafarer welfare, digitalization, and sustainability will continue to shape the future of the maritime industry (Koh et al., 2024; Shan & Zhang 2021).

The literature on the psychosocial impact of pandemics on seafarers serving on merchant ships is relatively scarce but increasingly relevant in the context of recent global health crises. Previous studies have emphasized the unique challenges faced by seafarers during pandemics, highlighting issues such as restricted access to medical care, limited communication with shore-based support systems, and concerns regarding infection control measures aboard ships (Jun & Beckman, 2022; Stannard, 2020).

2.1 Rationale

Research by Smith et al. (2019) underscores the psychological impact of prolonged periods of isolation and uncertainty on seafarers' mental health, including symptoms of anxiety, depression, and stress. Furthermore, studies have pointed out the disproportionate burden of pandemics on seafarers from developing countries, who often face challenges in accessing healthcare services and adequate protection measures (Mulder & Klein, 2024; Srinivas & Sivaraman, 2021).

In addition to the direct impact on seafarers' well-being, pandemics have also disrupted global supply chains and shipping operations, leading to significant economic losses and logistical challenges (Narasimha et al., 2021). The closure of ports, travel restrictions, and quarantine measures have resulted in crew changeovers becoming increasingly difficult, exacerbating fatigue and mental health issues among seafarers (Doumbia-Henry, 2020; Shan, 2022). Moreover, the lack of standardized protocols and coordination among maritime stakeholders has further complicated efforts to ensure the safety and welfare of seafarers during pandemics (Chua et al., 2022).

This paper explores the psychosocial impact of the COVID-19 pandemic on the seafarer by examining the social, emotional, physical and work-related aspects of seafarer during the COVID-19 outbreak.

2.2 Research Methodology

A survey questionnaire was prepared with the dimensions of social, emotional, physical and work-related characteristics of seafarer while at sea during the Pandemic. The face and content validity of the questionnaire was carried out. A five point Likert scale was used to measure the responses (strongly agree, agree, neutral, disagree, strongly disagree). Google Forms was utilized to collect the data from the sailing cadre of 110 seafarers who served on merchant ships worldwide during the recent COVID-19 pandemic. Table 1 gives the demographic profile of the respondents.

Table 1 *Demographic Details*

Demographic Factors	Frequency(n=110)	Percentage
Seafarers Age Profile		
18 to 28 years	18	16.36
29 to 40 years	70	63.64
41 to 52 years	17	15.45
52 to 63 years	4	3.64
Above 63 years	1	0.91
Nationality of Seafarers		
Indian	101	91.82
Filipino	7	6.36
Romanian	1	0.91
Russian	1	0.91
Gender		
Male	107	97.28
Female	3	2.72
Family System		
Nuclear Family	68	61.82
Joint Family	42	38.18
Total years served in the shipping industry		
Less than 05 years	11	10.00
05 to 10 years	34	30.90
10 to 20 years	43	39.10
20+ years	22	20.00
Rank Profile		
Ratings (Deck/Engine/Galley)	10	9.09
Cadet (Deck/Engine)	5	4.54
Junior Officer (Deck/Engine)	38	34.55
Senior Officer (Deck/Engine)	57	51.82
Seafarers exceeded the duration of the signed employment agreements	78	70.90 % of contracts exceeded their signed duration on ships awaiting sign-off

Figure 1.a Respondents Profile: Total years served in the shipping industry

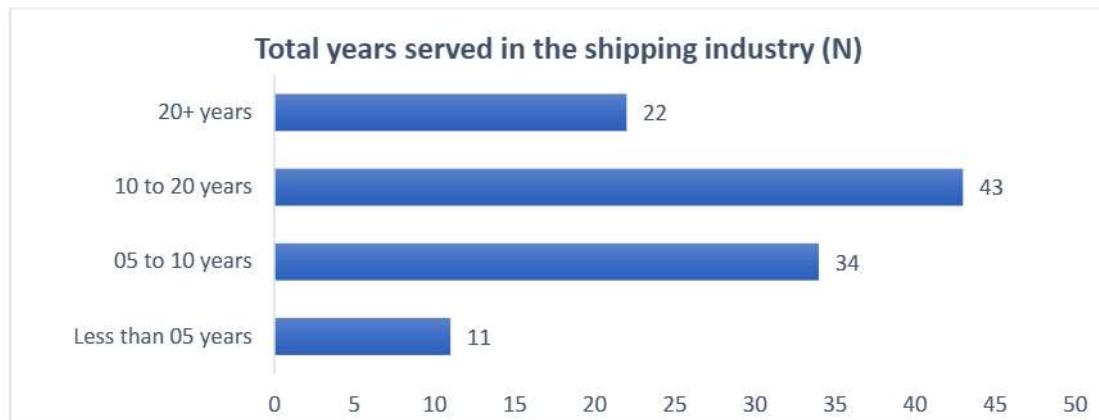


Figure 1.b. Rank Profile of the Respondents



2.3 Data Analysis and Interpretation:

The tables below reveal means, standard deviations of the responses of the respondents. The standard deviation of the responses indicates the presence of moderate variation in the responses. The *skewness* and *kurtosis* of the responses were calculated indicate that the distribution of the responses is near to normal distribution.

2.3.1 Work Related Aspects

Table 2 presents the work related aspects of the respondents, it focussed on nine distinct statements experienced by seafarers during the pandemic.

Table 2: Work-related Aspects of seafarers sailing on worldwide vessels during the COVID-19 pandemic.

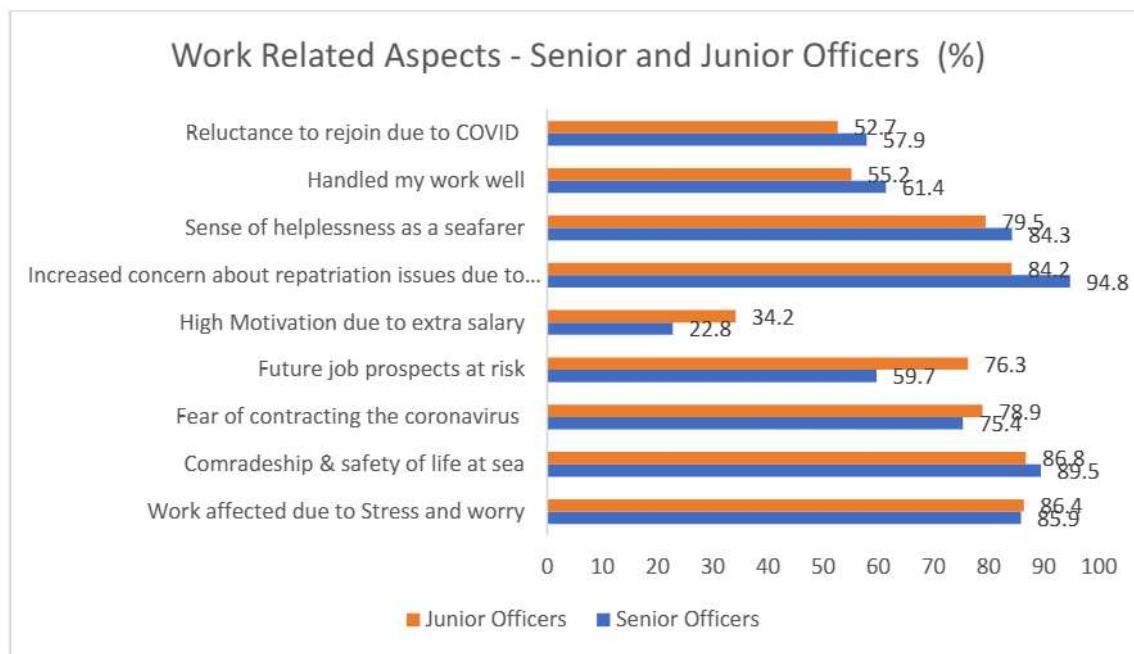
Item Code	Statements	Dimension Covered	Mean	Std. Deviation	Skewness	Kurtosis
WRA1	My work was affected due to increased stress and worries during the COVID-19 pandemic.	Stressed and worried	4.15	0.752	-1.037	2.354
WRA2	As a frontline worker, I feel stressed and worried about the safety of my life and my colleagues on board the ship during the pandemic period.	Comradeship & safety of life at sea in pandemic scenario	4.18	0.859	-1.424	2.803
WRA3	I was scared that if I got infected with the COVID-19 virus onboard the ship then I would not be relieved on time.	Fear of contracting the coronavirus infection	3.95	1.061	-0.893	-0.023
WRA4	I was worried that highlighting my concerns on the ship during the COVID-19 pandemic could affect my future job prospects.	Future job prospects at risk	3.62	1.173	-0.776	-0.341
WRA5	My motivation levels were high despite the problems of extended stay onboard due to the COVID-19 pandemic because I am getting paid extra for remaining onboard.	Motivation levels	2.86	1.062	0.184	-0.493
WRA6	Restrictions preventing crew leaving the ship or denying seafarers access to a visa-on-arrival, in the light of the COVID-19 pandemic, had led to increased worry among the seafarers.	Increased concern about repatriation issues due to COVID	4.45	0.686	-1.050	0.580
WRA7	I felt helpless as a seafarer during COVID-19 and waiting for things to improve and normalize soon.	Helplessness of a seafarer at sea	4.15	0.822	-0.782	0.176
WRA8	Despite my increased stay on board the ship during the COVID-19 pandemic, I handled my work well.	Handled the work well	3.56	1.054	-0.482	-0.520
WRA9	I felt worried about the situation of uncertainty and was reluctant to rejoin the ship during the COVID-19 Pandemic situation.	Reluctance to rejoin ship due to COVID	3.46	1.131	-0.335	-0.865

Table 2 offers a compelling insight into the multifaceted challenges faced by seafarers during the COVID-19 pandemic, highlighting the significant impact on their work-related aspects.

WRA1, measuring stress and worries due to the pandemic, exhibits a mean score of 4.15, indicating a high level of concern. This is further validated by WRA2, which explores

the impact on safety and camaraderie at sea, yielding a mean of 4.18. These findings underscore the pervasive anxieties regarding personal safety and the well-being of colleagues in the face of a highly contagious virus. Another major issue is the possible effects of the pandemic on seafarer's employability in the future. WRA4 with the mean value of 3.62, depicts worries of job losses or a shift in career paths resulting from the economic impact of the virus. This anxiety is further heightened with WRA9 which is focused on the question of whether or not one will have to rejoin the ship in the event of a pandemic with a mean of 3.46, indicating the respondent's unwillingness to go back to sea because of the existing threats. It also reveals the issue of repatriation and the duration spent at sea by the respondents. WRA6 has a mean of 4.45, which shows that seafarers have challenges in travelling due to COVID-19 restrictions and immigration concerns which make them remain anxious most of the time. This is further compounded by WRA8, with an average score of 3.56, illustrating the effects of social isolation caused by restrictions on mobility and the pressure this had on the mental state due to being away from loved ones for long periods. The data also offered some understanding of how helpless seafarers felt because of the pandemic scenario. WRA5, with a mean of 2.86, suggests that while motivation levels were high due to financial incentives, the extended stay onboard also presented challenges. WRA7, with a mean of 4.15, highlights the feelings of helplessness and a sense of being stuck in a difficult situation, waiting for things to improve.

Figure 2: Work Related Aspects - Senior and Junior Officers



* percentage of responses for 'agree and strongly agree'

Figure 2 reveals the percentage of responses for ‘agree and strongly agree’ for work related aspects from Senior officers and Junior officers. Most senior officers (94.8%) and junior officers (84.2%) had increased concern about repatriation during COVID-19 pandemic. The sense of helplessness was marginally higher for senior officers (84.3%) than for junior officers (79.5%), it indicates most of them felt helpless during COVID-19 pandemic. While 34.2% of the junior officers were motivated by extra salary while sailing, only 22.8 % of the senior officers showed the same motivation.

2.3.2 Social Aspects

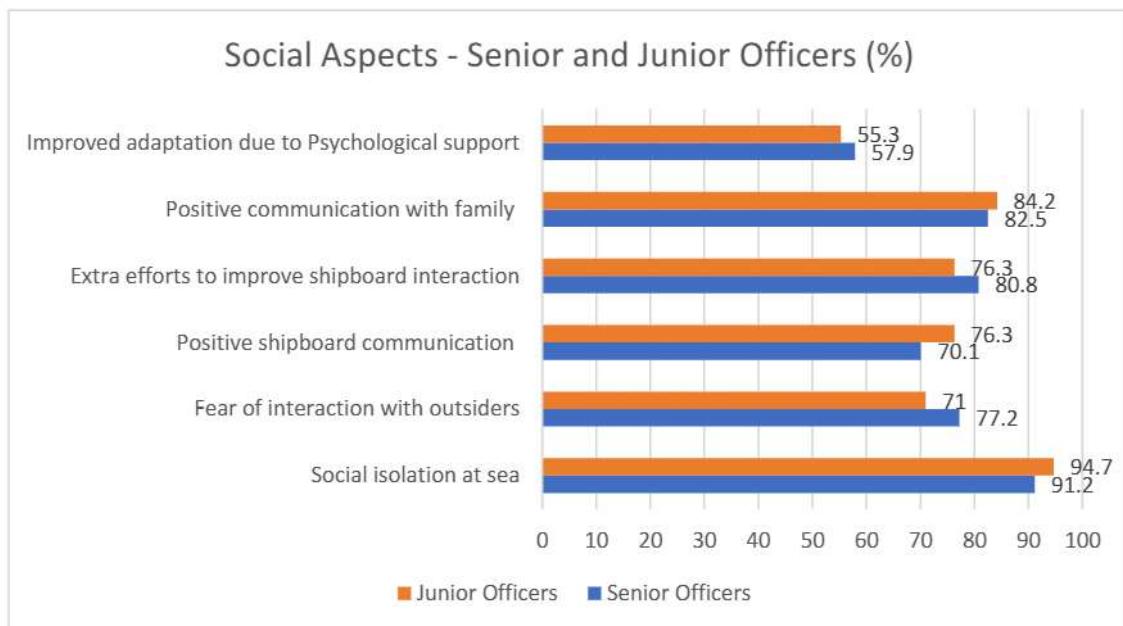
Regarding the social aspects of seafarers' experiences during the COVID-19 pandemic, focused on the significant challenges they faced in maintaining social connections and navigating the psychological impacts of isolation and uncertainty.

Table3: Social Aspect of seafarers sailing on worldwide vessels during the COVID-19 pandemic.

Item Code	Statements	Dimension Covered	Mean	Std. Deviation	Skewness	Kurtosis
SA1	I realize that the life of a seafarer isolates us from the world.	Social isolation at sea	4.39	0.767	-1.672	4.015
SA2	I felt afraid to physically interact with shore personnel who were not part of our ship for fear of catching the COVID-19 virus from them.	Fear of interaction with outsiders during COVID-19 pandemic	3.95	1.057	-0.935	0.075
SA3	During the COVID-19 pandemic, the interactions with my colleagues on the ship make me feel mentally positive as we are all in the same situation.	Positive shipboard communication for mental health	3.87	0.825	-0.556	0.005
SA4	Extra efforts were taken by the shipboard personnel to improve social interaction on the ship during the COVID-19 crisis.	Positive shipboard interactions in mess rooms & common spaces	3.84	0.841	-1.190	1.920
SA5	I feel mentally positive and at ease onboard the ship during the COVID-19 crisis when I am connected to my family and friends.	Positive communication with family & friends	4.11	0.758	-0.828	0.912
SA6	Psychological support has helped me understand the COVID-19 situation and adapt to these circumstances better.	Psychological support	3.42	1.053	-0.525	-0.245

Table 3 highlights the distinct dimensions of social isolation, communication, and psychological support experienced by seafarers. SA1, with a mean of 4.39, underscores the stark reality of social isolation at sea, where seafarers felt separated from the wider world. This isolation is further emphasized by SA2, with a mean of 3.95, indicating the fear of physical interaction with shore personnel due to the risk of contracting COVID-19. These findings highlight the anxieties associated with potential exposure and the psychological toll of limited social interaction. Despite the challenges of isolation, the data also reveals the positive impact of shipboard communication on mental health. SA3, with a mean of 3.87, suggests that interactions with colleagues on board fostered a sense of camaraderie and shared experience, contributing to a positive mental state. This is further supported by SA4, with a mean of 3.84, highlighting the efforts made to improve social interaction on board through designated common spaces, fostering a sense of community and shared experience. The importance of communication with family and friends during the pandemic is also evident. SA5, with a mean of 4.11, indicates the positive impact of maintaining communication with loved ones, providing a sense of connection and emotional support during a challenging time. Finally, SA6, with a mean of 3.42, underscores the role of psychological support in helping seafarers understand and adapt to the pandemic situation. The standard deviation of the responses indicates the presence of moderate variation in the responses.

Figure 3: Social Aspects - Senior and Junior Officers



* percentage of responses for 'agree and strongly agree'

The percentage analysis (Fig.3) reveals only 55.3% of junior officers and 57.9% of senior officers improved adaptation due to psychological support, while sense of social isolation was extremely high, 94.7% for Junior officers and 91.2% for senior officers. The challenges of COVID-19 reveal that relying only on psychological support is not sufficient to improve adaptation on board during such trying times as a pandemic.

2.3.3 Emotional Aspects:

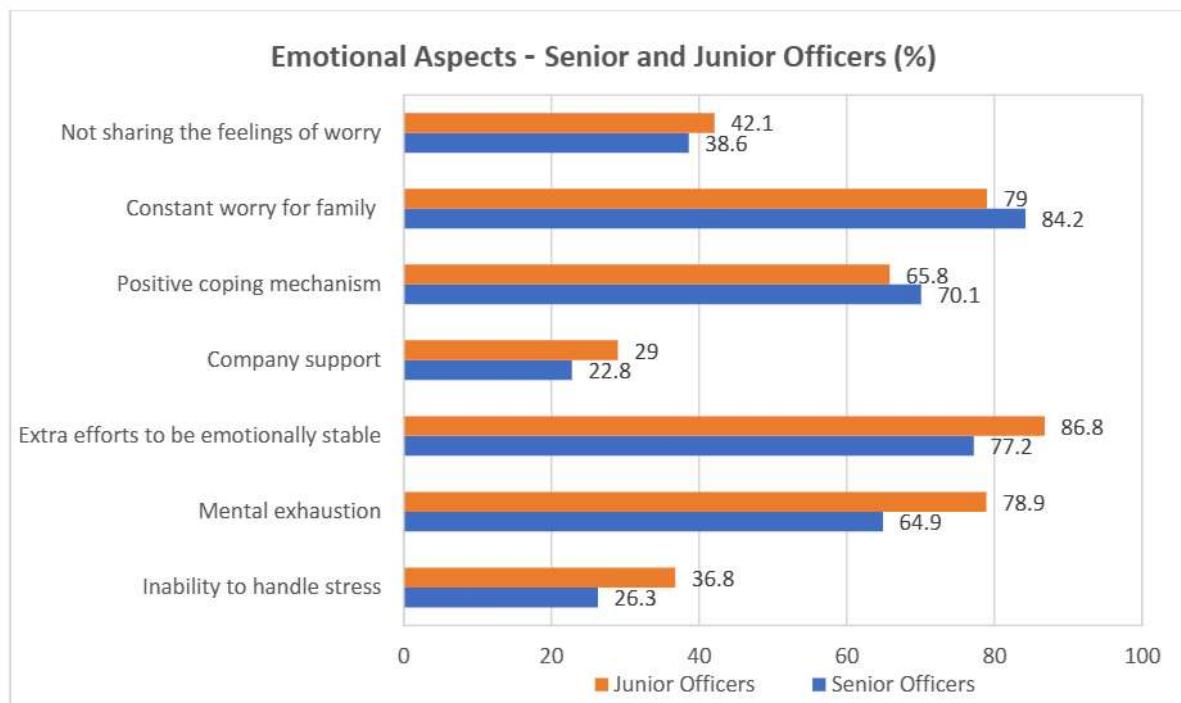
The emotional experiences of seafarers during the COVID-19 pandemic, highlights the distinct dimensions of stress management, emotional stability, trust, and not sharing their worries and concerns.

Table 4: Emotional Aspect of seafarers sailing on worldwide vessels during the COVID-19 pandemic.

Item Code	Statements	Dimension Covered	Mean	Std. Deviation	Skewness	Kurtosis
EA1	Though I understand the situation created by the COVID-19 crisis worldwide and in shipping, I am unable to handle the stress it has created in me.	Inability to handle stress	2.69	1.194	0.425	-0.895
EA2	I feel mentally exhausted due to the delayed signoff during the pandemic period.	Level of mental exhaustion & fatigue during pandemic	3.91	1.000	-0.823	0.405
EA3	I had to make extra efforts to keep myself emotionally stable during the COVID-19 crisis.	Extra efforts to be emotionally stable during the COVID-19 crisis	4.01	0.851	-0.835	0.404
EA4	I had a feeling that my company would care for my family in case I am stuck on-board the ship during the COVID-19 Pandemic and unable to sign off on the completion of the contract.	Seafarer's trust on maritime shipping companies	2.66	1.229	0.248	-1.000
EA5	I was able to handle the challenges due to the COVID-19 crisis positively.	Seafarer's positive coping mechanism in distress situation	3.70	0.904	-0.731	0.116
EA6	My life on the ship had become more stressful as I constantly worried about my family ashore due to the COVID-19 pandemic.	constant worry for family back at home	4.03	0.903	-0.891	0.590
EA7	During the COVID-19 crisis, the crew member did not share their feelings of worries with one another.	Not sharing the feeling of worry with colleagues	3.07	1.011	0.015	-0.858

The statement, EA1, with a mean of 2.69 indicates that the seafarers' struggles to handle the stress that resulted from the pandemic. EA2 which has a mean of 3.91, which emphasizes high levels of mental exhaustion and fatigue caused by the prolonged COVID-19 pandemic, shows the psychological burden that seafarers have had to endure during this first-ever global pandemic encounter in their lifetime. The mean of EA3 was 4.01, highlighting the great endeavours of the seafarer to ensure intactness of emotional well-being. This indicates that efforts were made to manage the stresses and concerns that are inevitable in such circumstances. EA4 had the lowest mean of 2.66, which also spoke of the fear of being abandoned on a vessel for a prolonged duration due to the pandemic challenges. EA5 with a mean score of 3.70 demonstrated the adaptability and usage of coping mechanisms used by distressed seafarers. However, EA6, with a mean of 4.03, highlights the constant worry and stress experienced by seafarers due to concerns for their families back home. This underscores the emotional toll of being separated from loved ones during a time of global uncertainty. Finally, EA7, with a mean of 3.07, reveals a behaviour of the seafarers of not sharing the feeling of worry with colleagues. This suggests a reluctance to acknowledge and address mental health concerns, potentially stemming from the perception of seafaring as a courageous and resilient profession.

Figure 4: Emotional Aspects - Senior and Junior Officers



* percentage of responses for 'agree and strongly agree'

Figure 4 depicting Emotional Aspects of Senior and Junior Officers reveals that junior officers (86.8%) required more efforts to be emotionally stable as compared to senior officers (77.2%). Concern for families at home was high for both senior officers (84.2 %) and junior officers (79%). Mental exhaustion was reported more by junior officers (78.9 %) as compared to senior officers (64.9 %). Both utilized positive coping mechanism to a high degree.

2.3.4 Physical Health Aspects

Table 5 addresses the physical health aspects of seafarers' experiences during the COVID-19 pandemic. The analysis of three statements (PHA1-PHA3) highlights the distinct dimensions of physical health awareness, lifestyle habits, and stress-reduction activities.

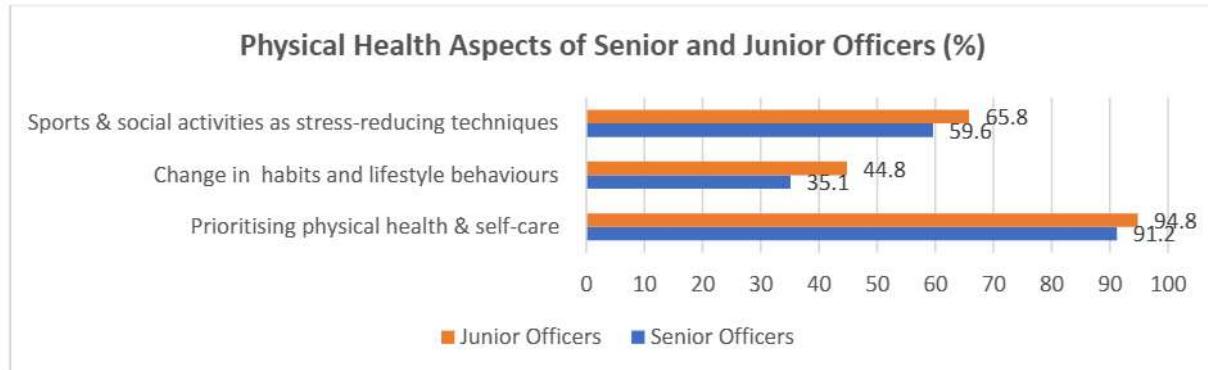
Table 5: Physical health aspect of seafarers sailing on worldwide vessels during the COVID-19 pandemic.

Item Code	Statements	Dimension Covered	Mean	Std. Deviation	Skewness	Kurtosis
PHA1	I was conscious of my physical health during the COVID-19 pandemic.	Prioritising physical health & self-care during the pandemic	4.25	0.656	-0.716	1.178
PHA2	My nicotine and/ or caffeine intake has increased during COVID-19 times.	Change in habits and lifestyle behaviours during the pandemic	3.03	1.323	0.022	-1.083
PHA3	To de-stress on the ship during the COVID-19 pandemic crisis, we regularly played physical games (like Table Tennis, Cricket, Basketball etc.) and carried out other social activities (such as Karaoke and Antakshari etc.).	Sports & social activities as stress-reducing techniques onboard merchant ships during pandemic	3.59	0.961	-0.548	-0.196

PHA1 had the highest mean of 4.25 showing appreciation of physical health amidst the COVID-19 crisis. Such a trend demonstrates a desire to maintain physical fitness during periods of confusion and distress. PHA2, with a mean of 3.03, reveals that there has been a significant shift in terms of habits and lifestyle behaviours which the seafarer had to adapt due to the pandemic. This raises a question of unhealthy habits in the seafaring population, which could be as a result of stress, isolation or lack of access to healthy foods. More research should be conducted about the particularities of these changes.

PHA3 with a mean of 3.59, emphasizes that sports and social activities are used as stress management tools on merchant ships during the pandemic.

Figure 5: Physical Health Aspect of Senior and Junior Officers



* percentage of responses for 'agree and strongly agree'

Fig 5 indicates the physical health aspect of senior and junior officers. Most officers prioritized physical health and self-care and participated in sports and social activities as a means to reduce stress. While 35.1% senior officers changed their habits and life style behaviours, the trend increased to 45.8% in junior officers, showing increased dependence to nicotine and caffeine.

Table 6: Correlations between the estimated scores of seafarer's psychological facets:

Correlations Table

	WRA	SA	EA	PHA
WRA	1			
SA	.586** (0.000)	1		
EA	.626** (0.000)	.462** (.000)	1	
PHA	.524** (0.000)	.319** (.000)	.491** (.000)	1

**. Correlation is significant at the 0.01 level (2-tailed).

Table 6 reported the result of the correlation analysis between the estimated scores of seafarers' psychological facets. The result found a positive and significant correlation among all the pairs of psychological facets. The highest positive moderately strong

correlation is found between work-related aspects and emotional aspects (0.626), followed by the correlation between work-related factors and social aspects (0.586) and then work-related factors and physical health aspects (0.524). The results also reported a positive correlation between the emotional aspects and physical health aspects (0.491), social aspects with emotional aspects (0.462) and physical aspects (0.319). Thus, it can be concluded that the selected four psychological facets are moderately and positively correlated.

3. Discussion and Conclusion

This research paper discusses significant challenges faced by seafarers on merchant ships during global pandemics in a systematic manner, starting with historical context to specifically focusing on the COVID-19 pandemic. The study used the COVID-19 pandemic as a means to understand the broader subject of the global burden of pandemics & its challenges to seafarers on merchant ships since ages. The historical analysis of pandemics and their impact on seafarers reveals a consistent and significant burden on the maritime workforce throughout history. From the early voyages of exploration to the present day, pandemics have posed significant threats to seafarers' health, safety, and well-being. The impact of pandemics on seafarers is multifaceted. The above research investigated a few of such facets and revealed a complex interaction across them. Correlation analysis of this research revealed a significant and positive relationship between all four psychological facets (social, work-related, emotional, and physical) indicating a strong interconnectedness of these factors. These findings suggest that the challenges faced by seafarers in one area, such as work-related stress, are likely to have a significant impact on other aspects of their well-being, such as their emotional state, social connections, and physical health. A deeper statistical analysis across these psychological facets reveals a significant impact of the pandemic on seafarers' overall well-being.

This research revealed that the respondents, the global seafarers, received the negative psychosocial impacts of the COVID-19 pandemic on their work-life balance, social relationships, and emotional & physical health. While negative psychosocial challenges impacted both senior and junior officers, the impact was felt more by the junior officers. According to the seafarers' perception from the survey, the pandemic made them stressed and had concerns regarding their safety, employment and long-term stay on-

board. Social isolation and the feeling of constant danger interacting with shore personnel made them more anxious. They worried about families back home. While seafarers were able to bear physical adversities and use coping strategies, they faced mental exhaustion and required extra efforts to be emotionally stable. Seafarers cared about their physical well-being, but showed increased dependence towards nicotine and caffeine.

This research reveals that prioritizing mental health and providing assistance as a key component in seafarer-centric policy making, facilitating crew changes and repatriation at all costs even in crises to minimise fatigue, enhancing shore support, ensuring effective communication, strengthening collaboration among stakeholders, improving living and working conditions on-board to ensure psychological safety at workplace, enhancing risk assessment & preparedness, supporting research and data collection, and finally training on-board personnel in psychological first aid is the need of the hour. By implementing these measures, the maritime industry can enhance support for seafarers during pandemics, promoting their overall well-being and resilience in the face of challenging circumstances.

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