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Factors Impacting Seafarers' Mental Health and Career Intentions

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Abstract

The main objective of the present study was to investigate factors related to seafarers' mental health. A sample of seafarers from 12 countries participated in the study. A list of stressors was used to assess both perception of exposure to these stressors and their subjective significance. The Symptom Checklist (SCL-90) was used to assess seafarers' mental health on 5 of 9 subscales: Depression, Anxiety, Hostility, Interpersonal Sensitivity, and Somatisation. Three significant findings emerged from the analyses. The first was that 3 types of stressors contribute significantly to mental health problems: (1) environmental factors (eg, vibration), (2) social problems (eg, bullying, homesickness, working alone), and (3) health problems (eg, physical injuries, viruses, and the illnesses). The second finding was that both stress and mental health issues determine seafarers' motivation for their work and their consideration regarding leaving the maritime industry. The third finding was that factors contributing to seafarers' consideration of leaving the industry were mainly related to social stressors such as isolation from family and friends, cultural differences at work, demands from supervisors, and bullying. Factors such as bad weather, working shifts, length of employment contract or a ban on disembarkment in ports were found to be relatively less important for seafarers as factors toward considering leaving the industry. The implications of these findings are discussed.

Keywords

seafarers, mental health, anxiety, depression, career retention

What do we already know about this topic?

Seafarers are exposed to demanding conditions at sea that affect their mental health. Prolonged absence from home, cultural differences, harsh living conditions and uncertainty contribute to depression, anxiety, burnout, somatisation, and other negative outcomes. High prevalence of mental health problems among seafarers has required attention.

How does your research contribute to the field?

The purpose of the study was to assess the mental health of seafarers, identify stressors, and understand factors that influence turnover. The study yielded 3 types of stressors contributing to these problems (environmental, social, and health-related), and the importance of social factors in predicting mental health problems.

What are your research implications toward theory, practice, or policy?

The findings provide additional insight into the stressors associated with mental health and seafarers' turnover intentions, while standard conditions including bad weather and difficult scheduling are less problematic. The findings highlight the urgent need to further increase attention paid to mental health issues on board and to address seafarers' mental health.

Introduction

Being a seafarer is a demanding job, exposing workers to a range of physical and psychological stressors that are known to impact mental health.[1,2] Seafarers are often at sea for months at a time, far from home, with little contact with life ashore. The teams on board often come from different cultures and communicate in different languages, thus adapting to different life expectations, standards, and lifestyles.[3,4] They often live and work in difficult temperature conditions, in confined spaces with a lot of noise, vibration, and the movement of the ship.[5] In addition, life at sea is often associated with feelings of insecurity,[6] the threat of piracy,[7] long working hours with unfavorable working

shifts, poor sleep, lack of physical activity, high work demands, lack of autonomy at work,[8] poor team cohesion, and poor perceptions of management.[3,4] During the COVID-19 pandemic, seafarers experienced additional problems with extended stays on board and repatriation issues, financial insecurity, discrimination, crew non-replacement policy,[9] extension or termination of their contracts due to lockdown[10-12] and so forth. In their recent review, Li et al[13] grouped sources of stress among seafarers into 7 groups: (1) natural environment (eg, extreme weather conditions), (2) physical working environment (eg, noise, vibrations, poor nutrition, lack of recreational facilities, and medical assistance), (3) social environment (eg, isolation, bullying, discrimination), (4) management style (working schedule demands, contract type), personal features (unhealthy lifestyle, personality), industry specific characteristics (eg, pirates), and health crisis (eg, the pandemic).

These working conditions can be extremely stressful for seafarers and result in a number of short- and long-term problems. Overall, for example, studies report increased symptoms of anxiety and depression which are manifested in restlessness, sadness, loss of interest and pleasure, hopelessness, irritability, panic attacks, frustration over apparently insignificant matters, lack of energy, problems performing routine tasks such as dressing, guilt and self-blame, concentration and decision-making problems, suicidal thoughts and attempts, self-directed violence, and burnout.[3,4] In a scoping review, Jonglertmontree et al[4] found that depressive symptoms were reported in 14% to 49% of seafarers, and burnout was reported in approximately 10% of seafarers. Although the range of prevalence is wide and the results may not be generalizable to the whole population of the seafarers, the results suggest that both depression and burnout are likely to be common problems among seafarers compared to normative samples. For example, the prevalence of depression in normative samples is thought to be about 6%[14]; a study by Veerman et al[15] of a large international sample of more than 150 000 participants found that depression ranged from 2% to 20%, with a median of about 5% to 10%, suggesting that the prevalence of depression in seafarers is on the higher end.

Depression and anxiety are not the only mental health problems associated with the occupational demands placed on seafarers. Studies also report a variety of other symptoms not directly related to anxiety and depression that negatively affect individuals' well-being, social relationships, and work efficiency. These symptoms include[1,2,16] (for a review, see[3,4,13,17]): social isolation, loneliness and homesickness, poor work climate, interpersonal conflict and bullying, increased complaints and work-related errors, work-related injuries, decreased work productivity, increased turnover intention, financial insecurity, poor physical health, alcohol and drug abuse, insomnia, fatigue, and emotional exhaustion. Fatigue is considered to be the major antecedent of mental health problems in seafarers.[17]

Due to the high cost of both seafarers' mental health and the financial impact on the maritime industry,[18] the discussion of seafarers' mental health is becoming increasingly vivid. For example, a search on Google Scholar on publications published between 2000 and 2022 yielded more than 10 000 hits on the keyword "seafarers & mental health," with nearly half of these published in the last 5 years. In 2022 alone, 4 comprehensive reviews of seafarers' mental health were published.[3,4,13,17] Related to this, Manning Annual Review and Forecast from June of 2023[36] reports that officer supply shortfall has reached a record since the initial analysis of the seafarer market 17 years ago, and that deficit levels are anticipated extend at least until 2028. The report concludes that "the seafarers labor market has become particularly tight with important implications for recruitment and retention as well as manning costs."[37] Recent interest in seafarers' mental health and wastage raised several questions considered below.

The Present Study

The present study had a twofold objective. The first was to identify the relative importance of stressors that contribute to mental health issues during the time when the pandemic restrictions were slowly diminishing. The second problem was to determine stressors that were related to mental health issues and contributed to seafarers thinking of quitting their jobs. We used previous literature and focus groups to identify key potential mental health stressors and to generate a list of factors that could potentially predict seafarers' intentions to leave the workplace, as well as the Symptom Checklist (SCL-90[19]) to assess seafarers' mental health. However, to avoid the large number of items in the SCL-90 that might cause seafarers to become bored and give arbitrary responses or suspend participation, we sought a compromise between

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shortening the checklist and maintaining high psychometric properties such as reliability or validity. Finally, we decided to use 5 of the 9 scales of the SCL-90. The scales were depression, anxiety, hostility, interpersonal sensitivity, and somatisation. The selection was based on the following considerations.

In 2018, Zhu and Ma[20] conducted a meta-analysis of 14 papers on the mental health of Chinese seafarers and found that the most common psychological problems among seafarers were depression and anxiety. Zhang et al[21] found that 30% of 1246 seafarers at sea had symptoms of depression and 26% had symptoms of anxiety. Another study by Lefkowitz and Slade[22] reported that 25% and 17% of seafarers exhibited symptoms of depression and anxiety, respectively, and 13% of seafarers exhibited symptoms of both.

While the prevalence of depressive and anxiety symptoms among seafarers seems to be relatively consistent across studies, this was not the case for other types of mental health problems. For example, a study by Zhu and Ma[20] found that seafarers had problems with somatisation, depression, anxiety, interpersonal sensitivity, terror, paranoia, and psychotic issues. A study by Zhu et al[23] showed that seafarers had relatively frequent problems with obsessive-compulsive symptoms, depression, anxiety, interpersonal sensitivity, and hostility. In addition, Zhou et al[24] found that the main manifestations of psychological problems among Chinese seafarers included somatisation, anxiety, obsessive-compulsive symptoms, phobia, paranoia, depression, hostility, and psychoticism. These data led us to believe that the 5 scales selected may represent the best compromise between the content validity of the checklist and its length. The scale, procedure, and sample are explained in more detail below.

Method

Participants

The sample included 349 seafarers from 12 countries (China, Georgia, Bulgaria, Croatia, Egypt, Finland, India, Japan, Montenegro, Serbia, Slovenia, and the United States). Whereas the majority of participants were from China (67%), we computed ANOVA to discover whether the sample was homogenous on mental health measures in terms of nationality. ANOVA showed statistically non-significant differences on all 5 measures of mental health, suggesting that our sample was homogenous for mental health in terms of nationality. For this reason, nationality was not considered as an independent variable.

Most of the participants were male (98%). The age of participants ranged from 20 to 29, 30 to 39, 40 to 49, 50 to 59, and 60 years and above, with the following proportions: 24%, 39%, 23%, 13%, and 1%, respectively. Of all participants, 52% were the deck department, 45% were marine engineers, 1% were from steward department, and 2% were other. In terms of rank, 15% were masters, 38% were officers, 30% were ratings, and 17% were others. In the time of the study, participants worked on container ships (55%), oil tankers (11%), bulk carriers (3%), passenger ships and ferries (5%), chemical and product tankers (2%), gas tankers (1%), other tankers (14%), ro-ro ships, dry cargo and supply ships (less than 1%), and other ships (6%). In the summer of 2022, 30%, 10%, 17%, 17%, 15%, and 13% of respondents were away from home for 2, 4, 6, 8, 10, and 12 months or more, respectively. In terms of maritime experience, 19% were newcomers (with less than 2 years of experience), 13% had between 3 and 5 years of experience, 18% had between 6 and 10 years, 20% had between 11 and 15 years, and 30% had more than 15 years of maritime experience. The participants reported different working schedules: 37% reported 4 h on duty and 8 h off duty, 5% reported 6/6 hours, 26% reported 8/8 hours on/off duty, and 32% reported other working schedules.

The participants were contacted through the network of several universities affiliated with the International Association of Maritime Universities (IAMU) and maritime companies indirectly affiliated with the IAMU network. The survey was available online and took approximately 20 min to complete. Participation was voluntary, individual, and anonymous. The study was conducted in accordance with the ethical standards of the Helsinki Declaration and approved by the Ethics Committee of Batumi Navigation Teaching University, Batumi, Georga. Data collection was conducted in the summer of 2022. During this time, the restrictions related to the pandemic were slowly pulled back, with some countries (eg, China) continuing with a lockdown regime, and many seafarers being on-board beyond their contract length, or having had an on-board extension experience during the 2019 to 2022 pandemic years. This issue is further addressed in the Discussion section.

Measures

Depression, anxiety, hostility, interpersonal sensitivity, and somatisation were assessed using the respective subscales of the SCL-90.[19] The SCL-90 is a multidimensional self-report symptom inventory developed by Derogatis et al.[19,25] Each item of the questionnaire has a 5-point scale ranging from 1 (not at all) to 5 (excessive degree) based on the degree of distress experienced by the individuals in the past 7 days. In our study, the Cronbach's alpha coefficients of the depression, anxiety, hostility, interpersonal sensitivity, and somatisation subscales were sufficiently high, 0.95, 0.97, 0.94, 0.95, and 0.95, respectively. The SCL-90 reflects the general mental health symptoms of individuals in 9 dimensions, including obsessive-compulsive symptoms, phobic anxiety, paranoid ideation, and psychoticism in addition to the 5 dimensions listed above. Final CSL-90 scores are reported for each of the 9 subscales as well as for 3 measures of global mental health[26]: Global Severity Index (GSI), Positive Symptoms Distress Index (PSDI), and Positive Symptoms

Table 1. Regression analyzes: Beta Coefficients of Depression and Anxiety.

	Depression			Anxiety		
	Beta	*t*	*P*	Beta	*t*	*P*
Bullying	.30	5.72	.00	.26	5.03	.00
Vibration	.24	3.36	.00	.23	3.18	.00
Physical injuries	.10	1.89	.06	.19	3.55	.00
Homesickness	.13	2.38	.02	.16	2.88	.00
Viruses and diseases	.17	3.06	.00	.15	2.66	.01
Working alone	.07	1.35	.18	.13	2.54	.01
Chemicals	.06	1.12	.27	.09	1.62	.11
Smoke	.02	0.47	.64	.07	1.31	.19
Lack of personal protective equipment	.06	1.15	.25	.05	0.86	.39
Heavy lifting	.04	0.71	.48	.04	0.68	.50
Seasickness	−.02	−0.37	.72	.02	0.42	.68
Heat	−.01	−0.15	.88	−.02	−0.27	.79
Sharp objects	.04	0.66	.51	−.02	−0.33	.74
Not allowed to get off the ship even when in port	−.01	−0.15	.88	−.06	−1.19	.23
Dust	−.08	−1.44	.15	−.08	−1.34	.18
Work in tight spaces	−.09	−1.55	.12	−.09	−1.51	.13
Noise	−.16	−2.23	.03	−.16	−2.27	.02
		$R^2 = 0.39$			$R^2 = 0.42$	
		F (17, 331) = 12.68, $P < .001$			F (17, 331) = 14.05, $P < .001$	

Total (PST). Since we used only 5 of the 9 scales, the SCL-90 total scores were not used as a measure of mental health in our study. In the analyses below, we only report the results on separate scales of SCL-90.

In addition to the SCL-90, participants answered a series of questions that included an assessment of motivation, stressors, health, athletic activities at sea, sources of anxiety and social support at sea, access to the Internet, career plans, and their companies' mental health policies and practises. The selection process of the stressors list was meticulous and carried out in 2 steps. Firstly, we extensively reviewed existing literature on mental health of seafarers to identify potential stressors. Subsequently, we organized 2 focus group involving 18 individuals who work with seafarers such as crewing agencies and maritime authorities, to gain a fresh perspective on the sources of stress experienced at sea. The focus groups followed semi-structured procedures including questions related to mental health status, policies, practices, and education for seafarers such as participants' experience with mental health issues onboard, how such issues manifest, what they thought could be the causes of mental health issues among seafarers, what agencies do or could do to help the seafarers and so forth.

The final list of the items for our survey was compiled by integrating the findings from the literature review, as well as the insights generated from the focus groups. This encompassed a wide range of factors, including environmental, social, health-related, and contract-related elements. For a detailed overview, refer to the Supplemental Material available online.

Statistical Analysis

SPSS 27 was used for the statistical analyses. We performed regression analyses to model the relative contribution of different sources of stress to seafarers' mental health and discriminant analysis to assess seafarers' motivation and to determine the factors that may lead seafarers to consider leaving the maritime industry.

Results

The results are divided into 2 parts. In the first, we address factors related to the stressors that predict mental health problems in seafarers; we show the results of regression analysis modeling depression and anxiety because depression and anxiety were determined to have an impact on seafarers' well-being in previous research.[16] In the second part, we focus on the stressors that lead seafarers to consider leaving seafaring; here we present the results of discriminant analyses. Mean scores/standard deviations of SCL-90 were 1.91/0.86 for Anxiety, 1.70/0.089 for Depression, 1.59/0.03 for Hostility, 1.71/0.90 for Sensitivity, 1.71/0.90, and Somatisation, 1.51/0.70.

Factors Determining Mental Health of Seafarers

To determine which factors contributed to the mental health of seafarers, we conducted 2 regression analyses predicting Depression and Anxiety. The independent variables included stressors that reflected the perceived extent of exposure to stressful factors, listed with the question, "How much are you exposed to the following while working at sea?" (Table 1).

Table 2. Standardized Coefficients and Group Centroids (SCL-90 Scale).

SCL-90 scale	Group centroids
Anxiety	0.45
Depression	0.37
Hostility	0.37
Yes	0.35
Somatisation	0.28
Interpersonal sensitivity	−0.41
No	−1.75

Higher Beta coefficients reflect higher levels of Depression and Anxiety. Factors in Table 1 are listed according to their relative importance in predicting anxiety and depression, with most important factors in the top rows of the table.

The analysis showed that the variables included in the analyses explained about 40% of variance on either Depression or Anxiety. A closer look at the results showed that variables that greatly contributed to depression and anxiety were bullying, vibration, physical injuries, homesickness, viruses and diseases, and working alone. Noise loaded negatively with both depression and anxiety, which might be an effect of collinearity between independent variables because the correlation coefficients between noise and vibration was .75, $P < .001$.

Prediction of Seafarer's Intention to Leave the Job

The next question asked what factors lead seafarers to consider quitting their jobs as seafarers. To answer, we conducted 2 discriminant analyses. In the first, the response to the question "Are you thinking of leaving your job within a year?" was used as the grouping variable, while the independent variables were the 5 scales of the SCL-90. Thus, the main objective of this analysis was to determine whether seafarers' psychological problems contribute to their thinking about leaving their jobs. The analysis yielded Wilkinson's $\lambda = 0.94$, $\chi^2 = 20.76$, $df = 5$, $P < .01$. The standardized coefficients of the canonical discriminant function and the centroids of the groups are shown in Table 2.

The results show that mental health scores significantly contribute to seafarers considering leaving their job. Four of the 5 scales of the SCL-90 are grouped around a centroid indicating that the participant was "thinking about leaving my job as a seafarer within a year." These scales are anxiety, depression, hostility, and somatisation, all of which are clustered around answer "yes." On the other hand, interpersonal sensitivity had a negative value and was close to the other centroid ("I do not consider leaving my job as a seafarer within a year"). The results indicate that mental health issues other than interpersonal sensitivity are strongly contributing factors to seafarers considering quitting their job within the coming year. The implications of this finding are discussed in more detail in the Discussion section.

Table 3. Standardized Coefficients and Group Centroids (Stress-related factors).

Factor	Group centroids
Isolation from family or friends	0.93
Yes	0.56
Cultural difference at work	0.30
Supervisors demands	0.21
Bullying from co-workers	0.21
Trouble sleeping	0.19
Amount of food available	0.09
Food quality	0.08
Seasickness	0.07
Worry about money	0.02
Company care	−0.04
COVID-19	−0.06
Shift work	−0.06
No internet or limited internet access	−0.08
Bad weather / rough sea	−0.08
Working alone	−0.26
Length of contract	−0.27
Not allowed to get off the ship in port	−0.34
No	−0.28

The second discriminant analysis was conducted to test the relative importance of the stressors and was calculated using the list of factors attached to the question, "How much do you think each of the following may contribute to your mood when you feel down or depressed." This list of stressors is different from the one presented in Table 1. Here, the main goal was not to find out how much seafarers are exposed to a particular stressor, but to assess the relative contribution of each stressor in causing seafarers to think about leaving their jobs. Therefore, this analysis included the same grouping variable as the ones presented in Table 2, while the independent variables were the job-related stressors; the list of stressors and the results are shown in Table 3. Wilks' lambda was 0.87, df = 17, chi-square = 48.75, and $P < .001$.

The results of this discriminant analysis showed that the variables that clustered around a positive centroid (indicating that the seafarers were considering leaving their job) were all related to social problems, such as isolation from family or friends, cultural differences in the workplace, supervisor demands, and bullying by colleagues; the only variable from this group that was not related to social problems was trouble with sleeping. On the other side were the variables that were of relatively little importance to seafarers considering quitting their jobs. These were variables related to work, such as quantity and quality of food, seasickness, financial concerns, company policy on mental health, problems related to COVID-19, work shifts, limited internet access, bad weather and rough sea, working alone, length of contract, and limited access to land in ports. The implications of these findings are discussed below.

Discussion

The main objective of the present study was to investigate factors related to seafarers' mental health. A sample of seafarers from 12 countries participated in the study; however, most of them were from China. Several stressors were assessed: (a) exposure to environmental stressors such as vibration, dust, and heat, and (b) exposure to social stressors such as bullying, being banned from disembarking in port, homesickness, etc. In addition to asking how seafarers perceive the intensity of these stressors, we also assessed the relative subjective importance of a particular source of stress, such as cultural differences, work shifts, financial concerns, internet access, supervisor demands, bullying, etc., identified in previous research.[3,4,13,17] The Symptom Checklist[19] was used to assess the mental health of seafarers. Although the entire checklist includes 9 scales, only 5 were used because previous literature suggested that these 5 may be most relevant for men at sea: Depression, Anxiety, Hostility, Interpersonal sensitivity, and Somatisation.[20]

The analyses yielded 3 significant findings. The first was that 3 types of stressors greatly contributed to mental health issues in our sample: (1) environmental factors (eg, vibration), (2) social issues (eg, bullying, homesickness, working alone), and (3) health-related problems (eg, physical injuries, viruses, diseases). Second, our results showed that both stress and mental health issues determined seafarers' motivation for their work and their consideration in regard to leaving the maritime industry. The third finding, which is related to the second, is that the factors contributing to loss of work motivation and considerations to leave their job are mainly related to social factors such as isolation from family and friends, cultural differences in the workplace, demands from supervisors, and bullying; factors such as bad weather, work shifts, length of work contract, or a ban to disembark in ports were found of little importance to seafarers considering leaving the industry. The implications of these findings are discussed below.

The results of our study suggest that several sources of stress are related to both the increase in mental health problems and seafarers' intention to leave their jobs. For example, there are some factors that are generally difficult to avoid, such as vibration or dust; there are some factors that are avoidable but seem to be less important in terms of mental health, such as the quality of food, our study suggests. However, of all the stress-related factors, social factors such as cultural differences, demands from supervisors and bullying were the most important in predicting mental health problems and seafarers' thoughts of leaving the industry.

What do these findings point to? One can assume that unpleasant environmental conditions such as vibration, heat, and rough seas are an unavoidable part of life on board that can be managed through seafarers' training and psychological support from the team on board. However, if a seafarer does not receive psychological support from the team on board or proves to be a victim of unfavorable social relations and bullying, living conditions on board deteriorate and the problem manifests itself in mental health problems.

The question is what can be done to effectively address the problem of seafarer mental health on board once the problem is identified. In general, there are several ways to address this problem, including professional help, tele-medicine, peer help, self-help, education, etc. Professional help may be a problem due to the lack of professionals available to provide rapid psychological help, language barriers, and limited access to the Internet in the case of online support. An alternative way is tele-medicine, which can be very effective in remote care, particularly for seafarers, but raises a number of problems, including ethical and legal issues.[27-29]

The third source of psychological support can come from peers. Here, the problem is that fellow seafarers are usually not able to identify the problem and, once identified, offer effective support. Finally, the fourth type of possible solution is a kind of self-help. In keeping with the great importance of seafarers' mental health, several psychological interventions and guidelines have already been introduced in recent years,[30-33] some of which are tailored to both seafarers and management. For example, in 2019, the National Maritime Occupational Health and Safety Committee[30] published an expanded guide entitled Practical Guidance for Shipping Companies on Improving Mental Wellbeing. The guide includes several tips and practical examples to promote seafarers' mental health and well-being related to changes in company and shipboard culture, shipboard environment, social interaction, fatigue, alcohol consumption, internet access and use, food and dining, peer support, senior management, and so on.

Another intervention program worth mentioning is the Guidelines for Mental Care Onboard Merchant Ships published by the International Seafarers' Welfare and Assistance Network,[32] a 12-page pamphlet designed to help seafarers identify elements of stress reactions and causes, such as harassment and bullying, anxiety and depression symptoms, fatigue, disruptive thinking and behavior, alcohol and drug problems, and suggests strategies to manage these problems, including tips for maintaining mental health onboard. ISWAN not only provided printed and online guides for seafarers, but the project also included active online counseling for seafarers in trouble.

In general, therefore, several options providing psychological aid for seafarers are already available. The problem, however, is that these types of interventions and guidelines may not reach their target audience, seafarers. When seafarers are in trouble, on board, far from home, exhausted, anxious, or depressed, and have limited access to the internet, self-help sites may not be the best option. In these cases, seafarers and their shipmates should find a way to break the silence at sea; they themselves should be able to identify a mental health issue, name it, and find help. To achieve this goal, mental health issues should be included in more

profound and systematic training of seafarers, including recognition of the factors contributing to mental health issues, so that all men at sea would at least know that the problem has a name and that there are ways to address it. Further, given the extremity of seafaring isolation and the distance from professional therapeutic aid at moments of crisis, a on board culture should be designed so to include the notion of mental health being a normative issue for seafarers.

Limitations

Our study also has some limitations that should be mentioned. The first is related to the period during which the survey was conducted. Seafarers were among that hardest hit by the consequences of the pandemic. COVID-19 had a major impact on seafarers' work demands, and additional stress has been shown to have had a negative impact on seafarers' mental health.[8-12,34-36] More than 200 000 seafarers were stranded at sea due to the pandemic because routine crew changes could not be carried out, while hundreds of thousands were stranded ashore, unable to return to their ships. Seafarers stranded on ships were deprived of their human rights, including the right to physical and mental health, family life, and freedom of movement, and were often forced to work beyond the 11-month maximum period set by the International Labour Organisation Convention, with some remaining on board for up to 18 months. The pandemic raised several problems in seafarers such as restricted medical assistance, restricted rights to shore leave, and repatriation problems[10-12] that are assured by the Maritime Labour Convention. Mental health was seriously impacted during pandemic, leading seafarers into depression, anxiety, and suicidal attempts.[11,12] The pandemic intensified problems of discrimination, and yielded restrictions to shore leave as one of the major problems of seafarers during this time.[37] The data for our study was collected in the summer of 2022, when some of pandemic-related restrictions were already withdrawn. However, in many countries, including China, the restrictions were still active and, in some ports, the shore leave of seafarers was limited despite restrictions in the country already having been withdrawn.[37] Due to a variety of experiences of seafarers worldwide regarding the pandemic, we believe that the second half of 2022, when the data for our study were collected, might be called the transition to post-pandemic period. In this vein, the findings suggesting that shore leave restrictions were of relatively little importance for the participants of our study do not align with the previous findings[36,38,39] and might be related to the unclear expectations in terms of shore leave and other possible restrictions in ports. In addition, the data of the contract extension beyond the contract limits that are likely to have impact on mental health[10] were not collected in our study. Follow-up studies should be conducted to address this question in more detail.

Second, the data were collected through IAMU associated universities and companies. Whereas the participation was anonymous and voluntary, the sample and the results might be biased in a direction unknown to us. In addition, the majority of participants were from China. This is not a problem per se but should be considered when conducting further or replicative studies including multicultural samples.

Thirdly, the finding that vibration was the only major stressor among the environmental factors (such as noise, dust, high temperature, etc.) came as quite a surprise to us. To double check the stability of the regression analysis coefficients, we performed a separate analysis only for marine engineers (not reported in the results section). This analysis also showed that vibration was the most significant stressor of all the environmental factors listed in the questionnaire. Further examination of the data suggested that the result may be partly due to the way the question was asked: "In your work at sea, to what extent are you exposed to the following factors? (0 = not at all, 1 = regularly, 2 = often, 3 = most of the time)". In this respect, respondents may have been thinking about the time component rather than the intensity component; although the intensity component may be shorter in terms of duration, it may be more impactful in terms of stress. We do not know that, so these issues call for a more detailed investigation of the effect of possible stressors on seafarers in different ship departments (eg, deck, engine, steward) as well as their position on board.

Conclusions

The results of this study provided important insights into the sources of seafarer stress and also raised questions that need to be addressed in further research, such as the long-term effects of pandemic restrictions on seafarer job satisfaction and mental health; how to equip seafarers to recognize mental issues among their co-workers while on-board, so they may offer some support; what are the factors that would make seafarers who left the profession for stress-related reasons come back; and how to improve working conditions to maintain seafarer mental health and job related dedication. Perhaps the most important message of the findings is the need to break the silence surrounding the discussion of mental health issues on board and to gain knowledge of both the why and the how. This article is a step toward this goal.

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Ethics and Informed Consent Statement

The study folowed WMA Declaration of Helsiniki. The study did not require witten consent because the data were collected anonimuously online. Our contact address was provided should any respondent require additional assistance. The study was approved by the Ethics Committee of Batumi Navigation Teaching University, Batumi, Georgia.

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Supplemental material

Supplemental material for this article is available online.

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