

Investigating the Mental Health Support and Services Available for Crew Members on Long-Duration Sea Voyages

Abdullatif A. Almarashi^{1*}, Mashael A. Hobani², Mohammad A. Assiri³, Essa A. Aljohani⁴, Mohammad S. Alharbi⁵, Turki K. Alzahrani⁶, Sultan M. Alzahrani⁷, Ghada A. Amir⁸, Ebtihal A Rajab⁹, Mushtaha A Ghaith¹⁰

1. Department of Research, Jeddah First Health Cluster, Jeddah, KSA, email: abalmarashi@moh.gov.sa
2. Health Services and Hospital Administration, King Abdulaziz University, Jeddah, KSA, email: mahobani@kau.edu.sa
3. Health control center in Jeddah Islamic Port, Ministry of Health, Jeddah, KSA, email: Maassiri@moh.gov.sa
4. Health control center in Jeddah Islamic Port, Ministry of Health, Jeddah, KSA, email: Eal-jahany@moh.gov.sa
5. Health control center in Jeddah Islamic Port, Ministry of Health, Jeddah, KSA, email: malharbi26@moh.gov.sa
6. Health control center in Jeddah Islamic Port, Ministry of Health, Jeddah, KSA, email: tukalzahrani@moh.gov.sa
7. Health control center in Jeddah Islamic Port, Ministry of Health, Jeddah, KSA, email: Salzahrani@moh.gov.sa
8. Department of Home care, Jeddah First Health Cluster, Jeddah, KSA, email: Dr.ghadaamir@gmail.com
9. Department of Operation (OR), East Jeddah Hospital, Jeddah, KSA, email: ebenrajab@moh.gov.sa
10. Department of Institutional Excellence, East Jeddah Hospital, Jeddah, KSA, email: maghaith@moh.gov.sa

*Corresponding author: Mr. Abdullatif A. Almarashi
Department of Research, Jeddah First Health Cluster, Jeddah, KSA Mobile No.: +966502322101
Email: abalmarashi@moh.gov.sa

ABSTRACT

Background: Long-duration Sea voyages present unique mental health challenges for crew members, such as work-related stress, isolation, and fatigue. The availability and effectiveness of mental health support services in the maritime industry remain underexplored, with the need for enhanced health policies and evidence-based interventions to improve crew members' well-being.

Methods: A cross-sectional survey design was used to collect data from crew members across various ship types over a six-month period, from June 2023 to November 2023. A structured questionnaire was employed, and participants were recruited using convenience sampling. Descriptive and inferential statistical methods, including regression analysis, were used to analyze the data.

Results: The survey, which included 801 participants, found a high prevalence of mental health issues among crew members, including stress and isolation. Although mental health services, such as confidential helplines and training, were available, their utilization was low. Education level and the duration of stay on board were significant predictors of the need for mental health support.

Conclusion: There is a pressing need to improve mental health support mechanisms within the maritime industry to address the unique stressors faced by crew members. Collaborative efforts involving stakeholders and health policy makers are necessary to develop and implement effective interventions to ensure the mental well-being of maritime workers.

Keywords: maritime industry, mental health, health policy, crew members, long-duration voyages, mental health support.

INTRODUCTION

The maritime industry plays a crucial role in global trade and commerce, with crew members enduring long periods at sea under challenging conditions. Their mental health is essential for both individual well-being and the efficiency of maritime operations. The literature reveals that crew members face unique stressors, such as isolation, demanding work conditions, and prolonged separation from family, which significantly impact their mental health (1, 2).

A review of the available research highlights the various factors contributing to mental health challenges among crew members, including work-related stress, fatigue, and loneliness (3, 4). Studies have consistently found that the mental health of maritime workers is affected by the lack of sufficient support services, social isolation, and the challenges associated with long periods away from home (5, 6). Moreover, stressors such as extended work hours, demanding tasks, and limited recreational opportunities also contribute to adverse mental health outcomes (7).

For instance, studies highlight that approximately 25% of seafarers report mental health issues linked to their demanding work environment (8). The COVID-19 pandemic further amplified these challenges by limiting shore leaves and extending contract periods, which exacerbated feelings of isolation (9). Addressing these issues is vital for the sustainability and efficiency of maritime operations, as the mental well-being of the crew directly impacts their performance and safety (10).

Efforts to support the mental health of maritime workers have seen some progress, with initiatives aimed at integrating mental health services into maritime operations. Confidential helplines, peer support networks, and mental health training are becoming more commonplace. According to studies, the use of digital tools, such as telemedicine and online counseling services, has shown promise in enhancing mental health support for seafarers (11). Despite these advances, utilization remains relatively low, hindered by stigma and inadequate awareness (12). Moreover, a significant proportion of crew members are still left without adequate mental health resources on board, which underscores the need for industry-wide reforms and proactive measures to foster an inclusive and supportive work culture (13).

The existing literature identifies different support mechanisms, including peer support programs, digital health technologies, and onboard medical services, to address mental health issues (14, 15). These interventions, however, are often underutilized or inadequately implemented, highlighting the need for more comprehensive and accessible mental health support systems (16). The role of peer support, technological interventions, and improved communication with family members has been emphasized as critical components for enhancing mental health outcomes among seafarers (17, 18).

The introduction of comprehensive support programs tailored to the unique needs of crew members is vital to mitigate the mental health challenges they face.

This research aims to comprehensively investigate the mental health support and services available for crew members on long-duration sea voyages, with a focus on understanding the factors that contribute to mental health challenges and the efficacy of current support mechanisms. By assessing the demographic and occupational characteristics of crew members, as well as the types of support provided and their utilization rates, this study seeks to identify gaps in existing mental health provisions. The results of this research will contribute to a deeper understanding of the specific needs of maritime workers, shedding light on key predictors of mental health support requirements, such as education level and duration of stay on board. This expanded knowledge can guide the development of targeted interventions and health policies aimed at enhancing crew well-being. Ultimately, these findings will support maritime stakeholders and health policymakers in creating more effective mental health programs, thereby promoting a safer, healthier, and more productive working environment for seafarers

METHODS:

Study design

This research is a cross-sectional study that aimed to assess the mental health support needs, availability, and effectiveness of services provided to crew members on long-duration sea voyages. The study utilized structured questionnaires and convenience sampling to gather data from participants across different ship types, ensuring a comprehensive analysis of the mental health challenges and support mechanisms in the maritime industry.

Objectives

The objective of this study is to investigate the mental health support needs of crew members on long-duration sea voyages and assess the availability, effectiveness, and utilization of support services. It also aims to identify the factors influencing the need for mental health support, such as demographic and occupational characteristics, and provide enhanced health policies and evidence-based interventions to improve mental health interventions for crew members. By addressing these aspects, the study aims to foster a safer and more supportive working environment for maritime workers, contributing to their overall well-being and the sustainability of the maritime industry.

Study date and duration

The study was conducted from June 2023 to November 2023, spanning a period of six months. Data collection took place during this time frame, with crew members from various types of ships participating. This duration allowed for a comprehensive assessment of the mental health support needs of maritime workers, as well as an evaluation of the available services and their effectiveness in different operational contexts.

Ethical Considerations

This study was conducted following the ethical guidelines of the Declaration of Helsinki. It was approved by the Jeddah Health Affairs' ethical committee with IRB approval number A04432. Informed consent was obtained from all participants, ensuring their awareness of the study's purpose, procedures, and their rights, including the option to withdraw at any time. Confidentiality and anonymity were maintained to protect participant identities throughout the research process.

inclusion and exclusion criteria

Inclusion criteria for this study included crew members currently working on long-duration sea voyages, with at least six months of experience, aged 18 years or older, and willing to provide informed consent. Participants were required to have sufficient experience to provide relevant insights into the mental health challenges faced during long voyages. Crew members of different ranks and types of ships, including cargo, passenger, and offshore vessels, were eligible, ensuring a diverse and representative sample of the maritime workforce.

Exclusion criteria included individuals not currently employed on a ship, those under 18 years of age, or those unwilling to participate in the study. Additionally, crew members who had less than six months of experience or those on short-term contracts were excluded to ensure the study focused on those with substantial exposure to the challenges of long-duration sea voyages.

Study Tool

The primary tool used for data collection in this study was a structured questionnaire designed to capture various aspects of crew members' mental health and their experiences on long-duration sea voyages. The questionnaire was administered in both online and handwritten formats, providing flexibility for participants to choose their preferred method. The questionnaire included sections on demographic information, occupational details, mental health challenges, and the availability and utilization of support services. It was developed based on a thorough review of relevant literature and validated through expert review to ensure comprehensiveness and reliability. The questionnaire was administered in both digital and paper formats, allowing participants to choose their preferred method of response, thereby improving response rates and ensuring data quality.

Validity of the Questionnaire

The validity of the questionnaire was ensured through several methods. Content validity was established by consulting with maritime health experts and reviewing relevant literature to ensure the questionnaire items accurately reflected the mental health challenges faced by crew members (1). A pilot test was conducted with a small group of participants to refine the questions and address any ambiguities, enhancing both clarity and relevance (2). Construct validity was also considered, ensuring that the questions effectively measured the intended mental health constructs. This

rigorous process helped ensure that the data collected was reliable and valid, providing an accurate representation of the mental health issues experienced by maritime workers.

Sample Size

This study employed a convenience sampling method to recruit participants from various maritime organizations and vessels. The sample size consisted of 801 crew members, which was determined based on the feasibility of access to the target population and the need for sufficient statistical power. Convenience sampling was used due to the logistical challenges of reaching crew members on long-duration sea voyages. This approach allowed for practical recruitment of participants who met the inclusion criteria and were readily available. While convenience sampling may have limitations in terms of generalizability, the diverse backgrounds of participants, including different ship types and roles, helped to provide a representative understanding of the mental health challenges faced by maritime workers.

Analysis plan

Data analysis was conducted using descriptive and inferential statistics to provide a comprehensive understanding of the mental health challenges faced by crew members. Descriptive statistics, such as frequencies and percentages, were used to summarize demographic characteristics, occupational details, and the prevalence of mental health issues. Inferential statistics, including chi-square tests and regression analysis, were applied to identify significant associations and predictors of mental health support needs. Statistical software, such as SPSS, was used to facilitate the analysis, ensuring accuracy and reliability of the results. This approach allowed for a detailed examination of the relationships between variables and helped to generate evidence-based recommendations for improving mental health interventions in the maritime industry.

Results:

Out of all surveyed ships crew (n=801), the overwhelming majorities were males (97.3%), their mean age was 36.7 ± 9.9 years, with almost two thirds of them (61.8%) in the age group (30-<50 years). One half of the participants (50.3%) had university qualifications. Two thirds (64.3%) were married and 60.5% had children. The sea farers formed 37.3% followed by the engineer officers (25.8%) and deck officers (17.2%). Most of the participants had experience for over five years (47.3%) [Table 1]. The table shows also the topmost 10 nationalities of the ships crew, where it was found that the most popular were the Egyptians, who constituted about one fourth of them (23.2%), followed by Filipinos (14.4%), Chinese (12.7%), Sudanese (11.7%) and Italians (10.7%).

The characteristics of the ships are displayed in Table 2, which shows that the great majority of the ships were either cargo ships (72.7%) or passenger ships (22.8%). Almost one quarter of the ships (23.2%) were raising the Saudi flag, followed by those raising the Italian flag (14.4%) and Egyptian flag (12.5%). Most of the surveyed ships crews spend long duration on board, ranging between three months (45.7%) to six months (21.6%) and up to more than six months (20.1%) [Table 2].

When the respondents were asked, from their perspectives, about the most common mental health challenges could face the ship's crew, 41.1% replied that the work-related stress came on the top list, followed by feeling of separation from family and friends (38.8%), isolation and loneliness (37.1%) and fatigue with sleep disturbance (34.1%). Meanwhile, they denoted that the available mental health support on the ships was "confidential helpline or support" (47.9%) and "mental health training" (22.2%). Only 23.0% of the respondents indicated the presence of physicians on board. Accordingly, 15.2% rated the available mental health support on the ships as excellent in addition to 52.4% who rated it as "good" and only 3.6% who described it as "poor" [Table 3].

From the clinical point of view, more than one third of the ships crew (38.5%) reported that they were current smokers; and almost one half of them (46.1%) indicated that they increase frequency of smoking while being on board. Also, it was noticed that one third of them (33.0%) indicated decrease in their food appetite, and 29.6% addressed losing weight while being on board. On the same context, 13.5% of them expressed worsening of their family relationship because of being on board [Table 4].

Figure 1 displays the response of the ship's crew to the quest if they had ever needed mental health support, out of all respondents, (98, 12.2%) reported yes. **Table 5** presents the differences in the percentages of those who needed mental health support according to their characteristics. It shows that only the current rank and education level had significant impact on the need for mental support $p < 0.05$, where the lowest percentage was recorded among the engineer hospitals (5.3%) and those who had Bachelor qualifications (9.7%), while the highest percentage was recorded among those with lower education level (22.2%). Otherwise, although the percentage was relatively high among females (13.6%), older ages (≥ 50 years) (17.6%), unmarried (12.6%), have no kids (12.7%) and those with experience (6-12 months), however, these differences are not statistically significant $p > 0.05$.

On the same line, as shown in **Table 6**, it was evident that the highest percentage of those who needed mental health support (24.8%) was recorded among the ship crew who spend more than six months on board. Meanwhile, it was observed that a relatively higher percentage was recorded among those who serve on passenger ships (16.9%), however, this difference is not statistically significant $p > 0.05$.

The regression analysis revealed that both the education level and maximum duration of stay on board are significant independent predictors for the need of mental health support $p < 0.05$. **Table 7** shows that, compared to those who have postgraduate degree, being at low education level (high school or less) increases the likelihood of the need for mental health support by almost four folds ($r = 3.469$, $p = 0.015$). Meanwhile, it was found that, compared to the crew who stays on board for less than one month, the stay on board for 6 months increases the need for mental health support by three folds ($r = 3.174$, $p = 0.000$), which increases up to more than five folds ($r = 5.765$, $p = 0.022$) in those who stay on board for > 6 months.

Table 1: Characteristics of the study group (n=801).

Characteristics	No.	Percentage
Gender:		
Male	779	97.3
Female	22	2.7
Age categories:		
<30 years	221	27.6
30-<50 years	495	61.8
≥50 years	85	10.6
Mean±SD	36.7±9.9 years	
Educational level:		
High school or less	108	13.5
Diploma	230	28.7
Bachelor qualification	403	50.3
Postgraduate degree	60	7.5
Marital status:		
Married	515	64.3
Not married	286	35.7

<i>Have kids:</i>		
Yes	485	60.5
No	316	39.5
<i>Current rank:</i>		
Deck Officer	138	17.2
Engineering Officer	207	25.8
Rating/Sea Farer	299	37.3
Other Position	157	19.6
<i>Years of experience:</i>		
<6 Months	25	3.1
6-12 Months	48	6.0
1-2 Years	83	10.4
2-5 Years	266	33.2
>5 Years	379	47.3
<i>Nationality:</i>		
Egypt	186	23.2
Philippines	115	14.4
China	100	12.5
Sudan	94	11.7
Italy	86	10.7
India	39	4.9
Syria	27	3.4
Bangladesh	26	3.2
Japan	23	2.9
USA	18	2.2
Others	187	10.9
Table 2: Characteristics of the ship and sailing.		
Characteristics of the ship	No.	Percentage
<i>Type of the ship:</i>		
Cargo ship	582	72.7
Passenger ships	183	22.8
Offshore ships	13	1.6
Cruise ships	2	0.2
Other types of ships	21	2.6
<i>Nationality of the ship (flag):</i>		
Saudi	186	23.2
Italy	115	14.4
Egypt	100	12.5
China	94	11.7
Japan	86	10.7
Liberia	39	4.9
Panama	27	3.4
Germany	26	3.2
Togo	23	2.9
Malta	18	2.2
Others	187	10.9
<i>Maximum continuous stay period on the ship:</i>		
1 day or less	16	2.0
3 days	7	0.9

1 week	2	0.2
2 weeks	7	0.9
1 month	38	4.7
3 months	366	45.7
6 months	174	21.7
>6 months	161	20.1

Table 3: Opinion of the participants about the most common mental health challenges facing the ship crew and the available mental health support on the ship.

Mental health challenges and available services	No.	Percentage
<i>The most common mental health challenges:</i>		
Work-related stress	332	41.4
Separation from family and friends	311	38.8
Isolation and loneliness	297	37.1
Fatigue and sleep disturbance	273	34.1
Uncertainty about duration of contract	66	8.2
<i>Available mental health support:</i>		
Confidential helpline or support	506	47.9
Mental health awareness training	178	22.2
Relaxation or stress management activities	57	11.3
Available physician on board	184	23.0
<i>Rating for the available mental health support:</i>		
Excellent	122	15.2
Good	420	52.4
Fair	127	15.9
Poor	29	3.6
No mental health services	103	12.9

Table 4: Relevant clinical characteristics of the participants.

Clinical characteristics	No.	Percentage
<i>Smoking habit:</i>		
Smoker	308	38.5
Nonsmoker	493	61.5
<i>Change smoking habit while on board (n=308):</i>		
Increase frequency of smoking	142	46.1
No change in the frequency	101	32.8
Decrease in the frequency	65	21.1
<i>Feel food craving changes while on board:</i>		
Increase food appetite	134	16.7
No change in food appetite	403	50.3
Decrease food appetite	264	33.0
<i>Noticeable change in weight while on board:</i>		
Gain weight	96	12.0
No change in weight	468	58.4
Lose weight	237	29.6
<i>Changes in the family relationship:</i>		
No relationship changes	379	47.3
Prefer not to answer	233	29.1
Change to better relationship	81	10.1
Change to worse relationship	108	13.5

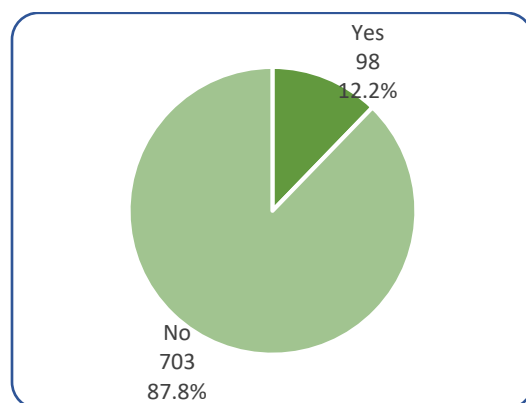


Figure 1: Ever needed mental health support by the respondents

Table 5:- The need for mental health support according to characteristics of the respondents.

Characteristics	Need for mental health support		χ^2	P*
	Yes	No		
	N(%)	N(%)		
Gender:				
Male	95(12.2)	684(87.8)	0.041	0.839
Female	3(13.6)	19(86.4)		
Age categories:				
<30 years	22(10.0)	199(90.0)	3.392	0.183
30-<50 years	61(12.3)	434(87.7)		
≥50 years	15(17.6)	70(82.4)		
Educational level:				
High school or less	24(22.2)	84(77.8)	12.796	0.005**
Diploma	29(12.6)	201(87.4)		
Bachelor qualification	39(9.7)	364(90.3)		
Postgraduate degree	6(10.0)	54(90.0)		
Marital status:				
Married	62(12.0)	453(88.0)	0.052	0.820
Not married	36(12.6)	250(87.4)		
Have kids:				
Yes	58(12.0)	427(88.0)	0.087	0.768
No	40(12.7)	276(87.3)		
Current rank:				
Deck Officer	18(13.0)	120(87.0)	16.407	0.001**
Engineering Officer	11(5.3)	195(94.7)		
Rating/Sea Farer	39(13.0)	260(87.0)		
Other position	30(19.1)	127(80.9)		
Years of experience:				
<6 Months	2(8.0)	23(92.0)	5.012	0.286
6-12 Months	8(16.7)	40(83.3)		
1-2 Years	11(13.3)	72(86.7)		
2-5 Years	24(9.0)	242(91.0)		
>5 Years	53(14.0)	326(86.0)		

*Based on chi square **Statistically significant

Table 6:- The need for mental health support according to the type of ship and maximum stay on board.

Characteristics	Need for mental health support		χ^2	P*
	Yes	No		
	N(%)	N(%)		
<i>Type of the ship:</i>				
Cargo ship	64(11.0)	518(89.0)	5.114	0.078
Passenger ships	31(16.9)	152(83.1)		
Other types of ships	3(8.3)	33(91.7)		
<i>Maximum continuous stay on the ship:</i>				
<1 month	4(12.5)	28 (87.5)	40.782	<0.001**
1 month	4(10.5)	34(89.5)		
3 months	20(5.5)	346(94.5)		
6 months	25(14.4)	149(85.6)		
>6 months	40(24.8)	121(75.2)		

*Based on chi square

**Statistically significant

Table 7:- Binary logistic regression for the factors predicting need for mental health support among the ships crew.

Parameter	B	Std. Error	95% Confidence Interval		Wald Hypothesis Test			Exp(B)	95% Confidence Interval		Wald for
			Lower	Upper	Wald Chi-Square	df	Sig.		Lower	Upper	
Constant	1.647	.4474	-2.524	-.770	13.558	1	.000	5.193			
Education level (Postgraduate, ref)		3.174	1.044	9.649			5.765	3.208	10.362		
High school or less	1.244	.5099	.245	2.243	5.952	1	.015	3.469	1.277	9.424	
Diploma	.572	.4943	.397	1.541	1.338	1	.247	1.771	.672	4.668	
Bachelor qualification	.361	.4782	.576	1.298	.570	1	.450	1.435	.562	3.663	
Maximum duration on the ship (<1 month, ref)											
1 month	1.001	.5736	2.126	.123	3.046	1	.081	2.722	.884	8.377	
3 months	1.155	.5673	2.267	.043	4.145	1	.042	1.927	1.097	3.385	
6 months	1.752	.2991	2.338	1.166	34.293	1	.000	3.174	1.044	9.649	
>6 months (ref)	.656	.2874	1.219	.093	5.208	1	.022	5.765	3.208	10.362	

Discussion

The findings of this study provide valuable insights into the mental health challenges faced by crew members on long-duration sea voyages, as well as the availability and effectiveness of support services. The results indicate that a significant portion of maritime workers experience mental health issues such as stress, fatigue, isolation, and anxiety, which are often exacerbated by the demanding nature of their work environment. These findings are consistent with existing literature, which highlights the unique stressors that crew members face during extended periods at sea, including the challenges associated with prolonged separation from loved ones and the pressure of working under harsh conditions (3, 5, 7).

Despite the high prevalence of mental health issues, the availability of support services appears to be inadequate. Although some interventions, such as confidential helplines and mental health training programs, are available, they are underutilized by crew members. This study identified several barriers to accessing mental health services, including a lack of awareness, stigma, and limited onboard resources. These findings align with previous research indicating that stigma and lack of awareness are significant barriers preventing seafarers from seeking mental health support (6). low utilization rates of available support services are concerning, given the critical need for effective mental health interventions for maritime workers. Improving access to these services and reducing the stigma associated with seeking mental health support are crucial steps toward enhancing the well-being of crew members (18).

The regression analysis conducted in this study revealed that both the level of education and the duration of stay on board are significant predictors of the need for mental health support. Crew members with lower educational qualifications were found to be more likely to require mental health assistance, suggesting that targeted interventions are needed to support this vulnerable group (6,9). Furthermore, longer durations at sea were associated with an increased likelihood of needing mental health support, highlighting the cumulative impact of prolonged exposure to stressors on crew members' mental well-being (9,18). These findings underscore the importance of developing tailored interventions that address the specific needs of different groups within the maritime workforce.

One of the key recommendations emerging from this study is the need for a more comprehensive approach to mental health support within the maritime industry. The implementation of peer support programs, improved communication with family members, and greater access to digital health technologies could play a significant role in addressing the mental health needs of crew members. Peer support has been shown to be effective in reducing the stigma associated with mental health issues and providing a sense of community among crew members (5). Additionally, digital health interventions, such as telemedicine and mental health apps, could offer convenient and confidential support for those working in remote locations (18).

The findings of this study also point to the need for greater collaboration among stakeholders, including maritime organizations, health professionals, health policy makers and regulatory bodies, to develop and implement effective mental health interventions. Collaborative efforts are essential to ensure that crew members have access to the necessary support services, regardless of their location or the type of vessel they work on (9). Furthermore, increasing the availability of onboard medical professionals with mental health training could significantly enhance the support provided to crew members during their voyages.

Another important aspect to consider is the role of the organizational environment in shaping crew members' mental health outcomes. The study found that work-related stress was one of the most commonly reported mental health challenges among crew members, which is consistent with previous research on the psychosocial work environment in the maritime industry (7). Efforts to improve working conditions, such as reducing excessive workloads, providing adequate rest periods, and offering recreational activities, could help mitigate some of the stressors faced by crew members. Organizational policies that prioritize the mental well-being of crew members are essential for creating a supportive work environment and promoting a culture of mental health awareness (18).

Study Limitation

The limitations of this study should also be acknowledged. The use of convenience sampling may limit the generalizability of the findings to the broader population of maritime workers. While the sample included a diverse group of participants, it may not fully represent the experiences of all crew members, particularly those working on different types of vessels or in different regions. Additionally, the cross-sectional design of the study precludes any conclusions about causality.

Longitudinal studies are needed to better understand the long-term impact of mental health challenges and the effectiveness of interventions in the maritime industry.

Conclusion

In conclusion, this study provides important insights into the mental health challenges faced by crew members on long-duration sea voyages and the availability of support services within the maritime industry. The findings highlight the need for more comprehensive and accessible mental health support systems, as well as targeted health policies and interventions for vulnerable groups. By addressing the unique stressors faced by maritime workers and enhancing the availability of support services, stakeholders and health policy makers can contribute to a safer, healthier, and more sustainable work environment for all crew members. The development of evidence-based healthcare policies and collaborative initiatives will be key to ensuring that the mental health needs of crew members are effectively addressed, ultimately improving their quality of life and the efficiency of maritime operations.

Disclosures

Ethics Statement

This study was conducted in accordance with ethical guidelines and principles outlined in the Declaration of Helsinki. The study was approved by the ethical committee of Jeddah Health Affairs with IRB no (A04432) prior to the initiation of the study. All participants were informed about the purpose of the study, the procedures involved, and their rights, including the right to withdraw at any time without consequences. Written informed consent was obtained from all participants prior to their inclusion in the study. Confidentiality and anonymity of the participants were strictly maintained throughout the research process, ensuring that personal information was not disclosed or identifiable in any of the findings.

Consent for publications

All authors provided consent for the publication of this manuscript. Participants were informed that the results of the study would be published in a scientific journal, and their consent included agreement to publish aggregated data in a manner that does not identify individual participants. No personal or identifiable information is included in the published material, ensuring full anonymity of all respondents.

Data Availability

The datasets generated and analyzed during the current study are not publicly available due to privacy and confidentiality concerns but are available from the corresponding author upon reasonable request. Any requests for data must comply with ethical guidelines and ensure that participants' anonymity and confidentiality are protected.

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Conflict of interest

The authors declare that there are no conflicts of interest related to this study. All authors have no financial or personal relationships that could inappropriately influence or bias the content of this research.

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Table legend

Table 1. presents the demographic characteristics of the study participants, including gender, age, educational level, marital status, rank, years of experience, and nationality. The table provides an overview of the diverse background of crew members surveyed, highlighting key factors such as age distribution, educational attainment, and work roles within the maritime industry.

Table 2: provides information about the characteristics of the surveyed ships, including the type of ship, nationality of the ship (flag), and the maximum continuous stay period of the crew on board. This table helps illustrate the operational context and diversity of the ships involved in the study.

Table 3: presents the participants' perspectives on the most common mental health challenges faced by the ship crew and the available mental health support on board. It provides insight into the prevalence of issues like work-related stress, isolation, and the effectiveness of current support services available to maritime workers.

Table 4: provides information on the relevant clinical characteristics of the participants, including smoking habits, changes in smoking frequency while on board, changes in food appetite, weight changes, and family relationships. This table highlights the physical and social factors that may contribute to crew members' mental health challenges.

Table 5: presents the need for mental health support according to the characteristics of the respondents, such as gender, age, educational level, marital status, and current rank. It highlights the differences in mental health support needs based on these demographic factors, providing insights into which groups may require additional interventions.

Table 6: presents the need for mental health support based on the type of ship and the maximum continuous stay on board. It illustrates how these operational factors influence the mental health support requirements of crew members, highlighting key associations that may inform targeted interventions.

Table 7: presents the results of a binary logistic regression analysis identifying significant predictors for the need for mental health support among ship crew members. The analysis includes education level and maximum duration of continuous stay on board as variables. Results indicate that lower education levels (e.g., high school or less) and extended durations on board (e.g., over six months) significantly increase the likelihood of requiring mental health support, as represented by the Exp(B) values and their confidence intervals. Statistical significance is denoted by p-values <0.05

Figure Legends:

Figure 1: Proportion of respondents indicating whether they have ever needed mental health support. Of the respondents, 87.8% (703 individuals) reported that they have never needed mental health support, whereas 12.2% (98 individuals) indicated that they have needed mental health support. The majority of respondents did not report a need for mental health support.