Exploring the depths: correlates of depression among seafarers in Mumbai, India

Anusooya Krishnan[1], Kumar Sumit[1], Varalakshmi Chandra Sekaran[1]

Abstract

Background. Seafarers experience unique challenges related to their profession, including risks for mental health. The present study explored the correlates of depression among seafarers in India.

Methods. Following ethics clearance, this cross-sectional study was conducted at an international shipping company in Mumbai, India. Using time-bound convenience sampling, 105 multi-state seafarers were recruited following verbal consent. The Beck Depression Inventory and Work-Related Quality of Life scale were used to screen for the study outcomes. Data analysis was performed using Jamovi 2.0. Descriptive statistics and Chi-square tests were used to assess associations, and logistic regression was performed to identify correlates of depression.

Results. Of 105 seafarers, the majority (98.1%) were male, most were married (80%), and were aged between 18-35 years (56.2%). About 42.9% had an income of INR 3 lakh (≈$3604) and above monthly. An overwhelming majority had mild mood disturbances, which was found among 90.5% and 8.6% reported depression. Seafarers who engaged in regular physical activity and had higher monthly incomes had higher Work-Related Quality of Life. A significant association was found between depression and isolation (p=0.031) as well as with Work-Related Quality of Life (p=0.012). On logistic regression, we found that the number of hours of work per day, experiencing isolation and Work-Related Quality of Life, significantly predicted depression.

Conclusions. The existing burden and treatment gap for mental health morbidity among seafarers needs to be addressed. To address early indications of mental health conditions among seafarers, implementing mental health screening and offering counseling services on board may be the way forward.

[1] Department of Global Public Health Policy and Governance, Prasanna School of Public Health, Manipal Academy of Higher Education, Manipal, India

Introduction

The World Health Organisation (WHO) states that health is "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity." It also reiterates the importance of having the capacity to conduct a "socially and economically productive life" (1). Mental health has come to be considered one of the most crucial aspects of well-being. The Sustainable Development Goal (SDG) No. 3 of the United Nations seeks to ensure the achievement of optimum mental health (1,2). In the broad range of mental health conditions, anxiety and depression are emerging as significant public health threats (3). Depression is the primary cause of mental disorders which account for 13% of all DALYs lost according to the Global Burden of Disease study (3), with India having some of the highest rates at 4.5% in 2024 (4).

The common mental health conditions, such as depression and anxiety, are mainly compounded by isolation, stress, and other difficulties experienced in personal life and working conditions of an individual. Occupations that involve long hours, exposures to high pressure, working in remote areas at long distances from home, or in the case of people who are continuously exposed to constantly changing situations such as soldiers, drivers, miners, healthcare workers, and seafarers, are at risk of experiencing mental health issues due to the nature of their work (5-8).

Seafarers form the backbone of the global trade, commerce, and maritime industry work on ships, overseeing the navigation, operation, and maintenance of the vessels that trade goods across the seas. Seafarers typically spend long hours and months at sea in confined spaces, constantly exposed to hazards involving demanding physical work, and challenging weather conditions, and also lack other facilities compared to other occupations on shore (9). There is a paucity of literature on seafarers' mental health, which may relate to the transient nature of the occupation as well as the challenges in accessing this difficult-to-reach population. However, the limited existing literature reveals that there are high rates of mental health conditions among them (10,11) in comparison with individuals in other occupations. Swift (11) reported that mental health disorders showed an increasing trend among the seafaring population between 2011 and 2016, with 37% of them experiencing such conditions in 2016. It has been found that the seafaring profession presented unique exposures leading to elevated levels of mental health risks and even suicides among them

(12). Among these situations, inherent to the seafaring occupation, is the 'isolation and loneliness' (13) and 'separation from family' (10,14).

According to data provided by the Indian Ministry of Shipping, the number of Indian seafarers operating on foreign or Indian-flagged vessels increased by an unprecedented 35% in 2021, and 15.6% of deaths at sea are suicide-related (15). It is generally known that occupational factors can impact one's health and quality of life at work. Specific emotional, behavioral, and physical pressures unique to seafaring cannot be compared to occupations ashore (16,17). Exposures particular to seafaring include enduring severe weather, extremely high or low temperatures, being at sea for lengthy periods, constant exposure to noise and vibrations, being isolated from family and friends, working long shifts, erratic or poor quality of sleep, crew changes, and/or poor job security. Maritime workers are also known to have fewer coping mechanisms at their disposal. Sirgy et al. (18) and Kim at al. (19) have argued for the inclusion of work-related quality of life (WRQoL) programs as a means to enhance quality of life.

Given the paucity of empirical research on the mental health of WRQoL seafarers and in the Indian setting, this study aims to explore depression, WRQoL, and their associated factors and identify their correlates among seafarers.

Materials and methods

Approvals

The research protocol was approved by the institutional ethics committee (IEC2-63/2023) from a tertiary care hospital. Verbal consent from all the participants was obtained before data collection. This was done as most participants were offshore and had to be contacted through phones to collect data. The confidentiality of the data was maintained. The administrative permission to conduct the study was obtained from the shipping company, in Mumbai.

Materials

The data collection tools included socio-demographic pro forma, Beck's Depression Inventory for screening for the level of depression (20) and the Work-Related Quality of Life scale designed by Easton and Van Laar (21) In addition, in the socio-demographic proforma, personal history, work environment, and work-related hazards faced by them, including occupational history, were obtained. Depression was

screened using the Beck Depression Inventory (BDI) which has been used in the normal population. Each response on the BDI is given a value between 0 and 3, with higher scores indicating a higher level of depression. The Quality of Working Life (QoWL) scale, based on six independent psychosocial subscales, is an evidence-based measurement of work-related quality of life. By totalling the adjacent raw scores in the subscale, higher percentiles or score between 83–115, imply a better quality of working life. All seafarers, including sailors/ratings/crew and officers on board and people working on both the deck and on the engine side with a minimum of six months of experience working on a ship, met the inclusion criteria for the study. Office workers, administrative staff, and other non-mariners employed by the corporation were excluded based on the exclusion criteria.

Methodology

This cross-sectional study was conducted at an international shipping company in Mumbai, India, including all seafarers: ratings/crew and officers. Convenient sampling method was used to choose 105 multi-state seafarers. The sample size estimate was not performed because the study was descriptive, involving time-bound enumeration. A hybrid approach of data collection was used, where the self-administered data collection took place in person with the seafarers offshore and interviews were conducted over the telephone with the onboard seafarers due to the unavailability of the seafarers at the study setting during the data collection. These participants were questioned on the phone during their breaks. The questionnaire was administered in English according to participant's language proficiency. In the beginning, the participants were explained about the topic and purpose of the study. Primary data collection was conducted between May and June 2023.

Data Analysis

Data were analysed with Jamovi 2.0 version. The categorical variables were summarized by reporting frequencies and proportions. Scoring was performed for BDI and WRQOL. Univariate analysis was carried out to identify the associated sociodemographic and work-related characteristics with quality of life. Using the Chi-square method, statistically significant factors associated with depression and quality of work life were determined. A p-value of less than 0.05 was considered statistically significant.

Results

At the time of our study, the seafarers were largely working off-shore. The seafarers included ratings, i.e., those of a lower rank of crew members on ships and officers who included those in higher ranks involved in managing and navigation roles. Of the 105 seafarers, a large majority (98.1%) were male and the rest were females. Most of the participants, 56.2% of the total, were aged between 18 to 35 years, and 80% of the participants were married. Less than half, i.e. 42.9%, included officer cadets who had a monthly income of INR 3 lakh (≈$3604) and the remaining participants included ratings (57.1%). Ratings had an education of 10th grade (57.1%) and officer cadets had 12th grade and above (42.9%). The study participants, irrespective of rank, were assigned to vessels internationally for a duration ranging from 2 to 10 months.

In terms of work-related characteristics of the seafarers, years of experience, an almost equal distribution was observed with 50.5% having 13 or more years of work experience. Day shifts were the most common (35.2%), followed by double shifts (42.9%). Night shifts and working more than two shifts were less prevalent at 2.9% and 18.1%, respectively. A significant majority (83.8%) of participants worked extra shifts. The majority (81.9%) worked 10 or more hours per day and 92.4% had 2-3 breaks, with 67.6% taking breaks lasting 30 minutes or more. Several work-related hazards were reported by the participants such as exposure to extreme weather conditions was indicated by 85.7% of participants, while enclosed space accidents were reported by 53.3%. Mooring operations involved 60.0% of participants, and 59.0% experienced exposure to loud noise. The ship's technical failures were reported by 64.8%, and 50.5% stated that they felt isolated or experienced loneliness. The shipping company undertook journeys to international destinations and hence, the participants travelled long distances to far shores, even up to Mexico. Each of the sailing trips lasted between two and ten months, depending on the participants' assignment and rank (Table 1).

During breaks, 48.6% reported engaging in leisure activities. The majority (87.6%) communicated with their family regularly with only a small percentage (2.9%) doing so on a monthly or yearly basis while 9.5% communicating weekly.

The participants were screened for depression and a notable majority (90.5%) of them reported experiencing mild mood disturbance. Only 1.0% of the participants reported borderline clinical depression, while

Table 1 - Distribution of sociodemographic characteristics of the study population.

Sociodemographic characteristic	n (%)
Gender	
Male	103 (98.1%)
Female	2 (1.9%)
Age	
>=18-35 years	59 (56.2%)
35years and above	46 (43.8%)
Marital status	
Married	84 (80.0%)
Unmarried	21 (20.0%)
Income per month (in rupees)	
>3 Lakhs	45 (42.9%)
2 – 3 Lakhs	38 (36.2%)
<1-2 Lakhs	22 (21.0%)
Work Characteristics	**n(%)**
Years of experience	
≥13 years	53 (50.5%)
<13years	52 (49.5%)
Type of shift	
Day shift	37 (35.2%)
Night shift	3 (2.9%)
Double shift	45 (42.9%)
More than 2 shifts	19 (18.1%)
Extra shifts	
Yes	88 (83.8%)
No	17 (16.2%)
Working hours per day	
<10hours	19 (18.1%)
≥10hours	86 (81.9%)
No: of breaks during working hours	
≥4breaks	4 (3.8%)
2-3 breaks	97 (92.4%)
≤1break	4 (3.8%)
Duration of breaks	
≥30minutes	71 (67.6%)
<30minutes	34 (32.4%)

8.6% had scores indicative of depression. Additionally, the majority (56.19%) reported experiencing a higher level of WRQoL. A significant porportion (34.29%) indicated an average level of WRQoL while a smaller proportion (9.52%) reported a lower WRQoL. These findings suggest that a considerable number of participants perceive their work-related quality of life to be positive, while a minority indicated lower levels of WRQoL.

The income per month demonstrated notable differences about WRQoL. Participants with an income of over INR three lakh had a higher WRQoL (27.62%). The p-value of 0.023 suggests a significant association between income levels and WRQoL, indicating that higher income is associated with better WRQoL. Furthermore, daily physical activity/exercise showed an association with WRQoL. Participants engaging in daily physical activities/exercise had a higher WRQoL (52.38%), while those who did not engage in exercising had average WRQoL (8.57%). The p-value of 0.022 indicates a significant association between daily physical activities/exercise and WRQoL, suggesting that individuals who engage in these activities experience better WRQoL. Additionally, the number of days of physical activities/exercise was associated with WRQoL. Engaging in physical activity for 4-7 days (19.05%) and 1-3 days (33.33%) showed higher proportions with higher WRQoL. The p-value of 0.039 suggests a significant association between the frequency of physical activities/exercise and WRQoL, indicating that increasing the frequency of such activities was positively associated with higher WRQoL.

Experiencing isolation was associated with depression, as 7.62% of participants who felt isolated also experienced depression, while 41.9% experienced mild mood disturbance. On the other hand among those who did not feel isolated, 48.57% experienced mild mood disturbance. The p-value of 0.031 suggests a significant association between feeling isolated and depression scores, indicating a relationship between feeling isolated/lonely and the severity of depression. The data shows that among people who regularly communicated with their family, 80% reported mild mood disturbance, 0.85% had borderline clinical depression, and 7.62% had depression. This can be a psychosocial condition because people who live on land and those who live at sea have different social environments which can affect their mood and mental health. Overall, 55.24% of participants with higher WRQoL experienced mild mood disturbance, with 4.76% reporting depression and 28.57% experiencing mild mood disturbance among those with an average WRQoL. The level of depression among the total population was 8.57%, with 90.48% experiencing mild mood disturbance. These findings indicate a significant association between WRQoL and the level of depression, with a p-value of 0.012 (Table 2).

Table 2 - Sociodemographic, work-related characteristics, and work-related hazards associated with the level of depression (n=105).

Sociodemographic characteristics	Level of depression				
	Mood Disturbance	Borderline clinical depression	Depression	Total	p-value
Gender					
Male	94 (89.52)	1 (0.95%)	8 (7.62%)	103	0.11
Female	1 (0.95%)	0	1 (0.95%)	2	
Age					
>=18-35 years	50 (47.62)	1 (0.95%)	8 (7.62%)	59	0.08
35years and above	45 (42.86)	0	1 (0.95%)	46	
Marital status					
Married	77 (73.33)	1 (0.95%)	6 (5.71%)	84	0.52
Unmarried	18 (17.14)	0	3 (2.86%)	21	
Income per month (INR)					
>3 Lakhs	44 (41.9%)	1 (0.95%)	0	45	0.07
2 – 3 Lakhs	32 (30.48%)	0	6 (5.71%)	38	
<1-2 Lakhs	19 (18.1%)	0	3 (2.86%)	22	

Work-related characteristics	Level of depression			
	Mild Mood disturbance	Borderline clinical depression	Depression	p Value
Years of experience				
≥13 years	49 (46.67%)	0	4 (3.81%)	0.55
<13years	46 (43.81%)	1 (0.95%)	5 (4.76%)	
Type of shift				
No	33 (32.43%)	0	5 (4.76%	0.727
Day shift	3 (2.86%)	0	0	
Night shift	42 (40%)	1 (0.95%)	2 (1.90%)	
More than 2 shifts	17 (16.19%)	0	2 (1.90%)	
Extra Shifts				
Yes	81 (77.14%)	1 (0.95%)	6 (5.71%)	0.318
No	14 (13.33%)	0	3 (2.86%)	
Working hours per day				
<10hours	17 (16.19%)	0	2 (1.90%)	0.849
≥10hours	78 (74.29%)	1 (0.95%)	7 (6.67%)	
No breaks during working hours				
≥4breaks	4 (3.81%)	0	0	0.765
2-3 breaks	88 (83.81%)	1 (0.95%)	8 (7.62%)	
≤1breaks	3 (2.86%)	0	1 (0.95%)	
Duration of breaks				
≥30minutes	64 (60.95%)	1 (0.95%)	6 (5.71%)	0.785
<30minutes	31 (29.52%)	0	3 (2.86%)	
Leisure time	**Level of depression**			
Activities during breaks				
Relaxing/Sleeping	38 (36.19%)	1 (0.95%)	3 (2.86%)	0.822
Nutritional break	31 (29.52%)	0	4 (3.81%)	
Physical/online activities	17 (16.19%)	0	2 (1.90%)	
Connecting through phone	9 (8.57%)	0	0	
Daily Physical activities/exercise				
Yes	80 (76.19%)	1 (0.95%)	8 (7.62%)	0.852
No	15 (14.29%)	0	1 (0.95%)	

Number of days of Physical activities/exercise				
4-7 days	26 (24.76%)	0	1 (0.95%)	0.686
1- 3 days	54 (51.43%)	1 (0.95%)	7 (6.67%)	
No	15 (14.29%)	0	1 (0.95%)	

	Level of depression			
Work-Related Hazards	**Mild Mood disturbance**	**Borderline clinical depression**	**Depression**	**p-value**
Exposure to extreme weather conditions				
Yes	81(77.14%)	1 (0.95%)	8 (7.62%)	0.88
No	14 (13.33%)	0	1 (0.95%)	
Enclosed Space Accidents				
Yes	49 (46.67%)	1 (0.95%)	6 (5.71%)	0.441
No	46 (43.81%)	0	3 (2.86%)	
Mooring Operations				
Yes	55 (52.38%)	1 (0.95%)	7 (6.67%)	0.363
No	40 (38.1%)	0	2 (1.90%)	
Exposure to loud noise				
Yes	56 (53.33%)	1 (0.95%)	5 (4.76%	0.691
No	39 (37.14%)	0	4 (3.81%)	
Ship technical failures				
Yes	63 (60%)	1 (0.95%)	4 (3.81%)	0.321
No	32 (30.48%)	0	5 (4.76%	
Isolation				
Yes	44 (41.9%)	1 (0.95%)	8 (7.62%)	**0.031**
No	51 (48.57%)	0	1 (0.95%)	
Contacting Family				
Daily	84 (80%)	0	8 (7.62%)	**0.013**
Weekly	9 (8.57%)	1 (0.95%)	0	
Monthly/Yearly	2 (1.90%)	0	1 (0.95%)	
WROoL				
Higher QoWL	58(55.24%)	0	1 (0.95%)	**0.012**
Average QoWL	30 (28.57%)	1 (0.95%)	5 (4.76%	
Lower QoWL	7 (6.67%)	0	3 (2.86%)	

Logistic regression was performed to identify correlates of outcome variables. Univariate and multivariate analyses of correlates of depression were conducted. The following factors were found significant in univariate analysis. They were further adjusted on multivariate analysis and included age, number of hours of work per day, income per month, number of years being employed as a seafarer, experiencing isolation, keeping in contact with family members, and WRQoL. Among these variables, the correlates that emerged included the number of hours of work per day, experiencing isolation, and WRQoL. In comparison with those who worked less than 10 hours per day, those who worked more had a higher likelihood of obtaining scores indicating depression (AOR 1.83, 95% CI (1.07-3.14), p = 0.028). In relation to experiencing isolation, in comparison with seafarers who did not experience isolation had a lower likelihood of having scores indicating depression than those who did experience isolation (AOR 0.046, 95 % CI (0.003-0.73), p = 0.029). WRQoL was also found to predict depression with those having low or average WRQoL having a higher likelihood of having depression in comparison with those who had a higher WRQoL (AOR 1.23, 95 % CI (1.04-1.44), p = 0.012) (Table 3).

Table 3 - Correlates of depression among seafarers.

Variable	OR	95% CI for EXP (B)		p-value
		Lower	Upper	
Age (years)				
18-35	1			
≥ 35	1.71	0.96	3.07	0.071
Duration of work (years)				
<10	1			
≥10	0.74	0.44	1.11	0.145
Income (INR)				
<3 Lakh	1			
≥ 3 Lakh	4.17	0.43	39.9	0.216
No. of hours of work per day				
< 10	1			
≥10	1.83	1.07	3.14	**0.028**
Contacting family				
Regularly	1			
Irregularly	3.58	0.57	22.29	0.171
Experience isolation				
Yes	1			
No	0.046	0.003	0.73	**0.029**
WRQol				
High	1			
Average/Low	1.23	1.04	1.44	**0.012**

Discussion

We explored correlates of depression among seafarers assessing sociodemographic determinants, levels of depression, and WRQoL from the perspective of seafaring participants. Most seafarers (98.1%) were primarily males belonging to the younger age group which is comparable to studies among seafarers elsewhere (10,11,22) which found that younger males are more likely to choose nautical careers. More than half of our participants worked for 10 or more hours per day and stated that they experienced isolation. Working long hours has been found to interact with multiple occupational factors and can have an impact on seafarers' physical and mental well-being, as reported by studies conducted in other settings likewise reported experiences of social isolation among their participants (10,23).

Among our participants, we found an association between experiencing isolation and depression (p=0.031) among the seafarers. We found that among those who did not report experiencing isolation, depression was lower vis-a-vis, it had a protective effect

from depression. This finding gets support from the study by Swift (11) emphasizing the importance of its effects on the mental well-being of the individual as well as its contribution to marine incidents and further to seafarer retention rates. Singh (24), in his study on Indian seafarers' and Bao et al. (25) from the Chi,nese contexts, reported that participants were seeking alternative careers, due to various reasons including family circumstances, general discontentment with the work environment, perceived lack of support towards their well-being including mental health and prioritizing commercial interests over welfare. These experiences in the aftermath of the COVID-19 pandemic may have further exacerbated these challenges. The onset of the COVID-19 pandemic had reportedly increased the isolation with border closures and other forms of restrictions, further prolonging their time away from family and requiring them to remain off-shore for longer periods (26-28). A report by Lefkowitz et al. stated that isolation may be a key factor in the development of psychological problems and led to higher turnover among them (2). Swift also argued that separation from family for extended periods, as required by the

occupation, the lack of social interactions, and the demands of the profession, made them particularly vulnerable (11), which was also substantiated by Abaya et al. (29), in their five-year study on reasons for repatriation of 6,759 Filipino seafarers, observed that psychiatric conditions included depression, anxiety, schizophrenia and bipolar disorder which also bore an impact on their quality of life.

We found that seafarers who regularly exercised (p=0.022) or were engaged in physical activity (p=0.39), showed higher levels of WRQoL than those who did not. This result is in line with other research on a range of occupational categories, including seafarers. Fan et al. studied the relationship between physical activity and seafarers' mental health outcomes and discovered that consistent exercise was linked to increased mental health and improved job satisfaction (30). However, exercising or engaging in physical activities was not correlated with depression in our study. Our findings did show, however, that WRQoL predicted depression among the seafarers. Low and average WRQoL predicted a 1.23 times higher likelihood of developing depression in comparison with those who had higher WRQoL. Studies conducted by Baygi et al. (31) and Jonglertmontree et al. (32) support our findings that WRQoL has an impact on seafarer's mental health. A systematic review by Nittari et al. cited "social isolation, distance from families, fatigue, stress, and long work shifts" preceding mood disorders among seafarers from among 25 papers indexed in PubMed, Web of Science, Cumulative Index to Nursing and Allied Health Literature (33). In terms of onboard availability of meals, seafarers are provided with three-course buffet-style meals for breakfast, lunch, and dinner with a standardized menu. The menu offered unlimited food including fruits, salads, and soups. Snacks were provided in the evening with 24/7 availability of beverages such as coffee and tea. The availability of vegetables, fruit, meat and starchy foods may have had a overall positive impact on the seafarers' physical and mental health.

The importance of providing prompt care and promoting mental well-being cannot be underestimated. Preventive and promotive measures may significantly impact the overall well-being and the overall quality of work life of the seafarers.

Conclusion

There is a noteworthy association between WRQoL and exercise, indicating that seafarers with higher WRQoL are more likely to engage in regular physical activity. The impact of isolation on the level of depression suggested that seafarers who experienced isolation had associated risk of depression. Furthermore, the study shows an association between income and WRQoL, and a significant association was also found between depression and work-related quality of life. The study recommends that employers and shipowners should make efforts to provide seafarers with access to licensed mental health specialists who can offer them counseling, treatment, and psychiatric support. This can be accomplished through telemedicine services, onboard mental health clinics, or collaborations with mental health organizations. To address early indications of mental health conditions in seafarers, implementing routine mental health screening programs and offering counseling services on board may be helpful.

Implications of the study

The quality of a person's life is impacted by their occupation which also affects their livelihood. It is widely recognized that work-related factors can also impact an individual's health and quality of working life. Mental health has also come to be considered as one of the most crucial aspects of health and well-being at sea. Global supply chains and international trade both heavily rely on the maritime sector. This study has brought important insights into the mental health and work-related quality of life among seafarers in the Indian context. Suboptimal mental health among seafarers can endanger one's safety, and the wellbeing of fellow seafarers and may affect the functioning onboard the vessel. Maritime work can also trigger stressors resulting in a decline of an existing mental health condition exacerbated by personal issues, social isolation or loneliness, and stress due to the nature of the work. A proactive approach to addressing these issues while emphasizing positive mental health and well-being then becomes imperative. Sound policies at the national level with guidelines to maritime companies can help adopt measures that will provide continuous mental health support through the provision of on-board printed health information, regulation of hours and opportunities for stipulated leisure time, availability of on-site or off-site counseling and leveraging technological advances to support these endeavors. These may be in the form of confidential web-based counseling, online therapy sessions, transfer of coping skills through training and expanding the

scope of senior staff in detecting and supporting the mental health of the crew may be some of the measures that would improve the well-being of seafarers contributing to employee well-being which is also under the purview of the SDGs.

Limitation

The generalizability of the findings in this study was impacted by the sample's size and diversity as the seafarers were sampled from one shipping company only. As a result of their remote and movable nature of work, reaching out to sailors for data collecting was difficult. Selection bias is a possibility due to this. Previous psychiatric pathology, present use of psychotropic drugs or use of cigarettes was not assessed. The company policy, however, does not permit smoking on board. Additionally, sociodemographic information on family type or children was not obtained. Although information on the seafarers diet was broadly available, their specific intake was not assessed. Another drawback of this study is its reliance on self-reported measures. Response bias, social desirability bias, and subjective question interpretation can all have an impact on self-reported statistics. Participants may have also over- or under-reported their experiences.

Riassunto

Esplorando le profondità: correlati della depressione tra i marittimi di Mumbai, in India

Introduzione. I marittimi affrontano sfide uniche legate alla loro professione, compresi i rischi per condizioni di salute mentale. Il presente studio ha esplorato i correlati della depressione tra i marittimi in India.

Metodi. Dopo l'autorizzazione del pertinente Comitato etico, questo studio trasversale è stato condotto presso una compagnia internazionale di spedizioni a Mumbai, India. Utilizzando un campionamento di convenienza con limiti di tempo, 105 marittimi multi-stato sono stati reclutati previo consenso verbale. Per valutare i risultati dello studio è stata utilizzata la scala Beck Depression Inventory e Work-Related Quality of Life (WRQoL). L'analisi dei dati è stata eseguita utilizzando Jamovi 2.0. Sono state utilizzate statistiche descrittive e test Chi-quadro per valutare le associazioni ed è stata eseguita la regressione logistica per identificare i correlati della depressione.

Risultati. Dei 105 marittimi, la maggioranza (98,1%) era di sesso maschile, la maggior parte (80%) era sposata e aveva un'età compresa tra 18 e 35 anni (56,2%). Circa il 42,9% aveva un reddito mensile di INR 3 lakh (≈$ 3604) o superiore. La stragrande maggioranza presentava lievi disturbi dell'umore, riscontrati nel 90,5% dei soggetti, mentre l'8,6% dichiarava di soffrire di depressione. I marittimi che svolgevano attività fisica regolare e avevano redditi mensili più elevati avevano un WRQoL più elevato. È stata trovata un'associazione significativa tra depressione e isolamento (p=0,031) nonché con WRQoL (p=0,012). Dalla regressione logistica, abbiamo scoperto che il numero di ore di lavoro al giorno, l'esperienza di isolamento e WRQoL erano significativi predittori di depressione.

Conclusioni. È necessario affrontare il problema dell'onere esistente e del divario terapeutico per la morbosità mentale tra i marittimi. Per trattare i primi segnali di alterate condizioni di salute mentale tra i marittimi, l'implementazione di screening sulla salute mentale e l'offerta di servizi di consulenza a bordo potrebbero essere la strada da seguire.

References

1. World Health Organization (WHO). [cited 2024 Feb 24]. Health and Well-Being. 2023. Available from: https://www.who.int/data/gho/data/major-themes/health-and-well-being [Last accessed: 2024 Jan 29].

2. Lefkowitz RY, Slade MD. Seafarer Mental Health Study. ITF Seafarers' Trust & Yale University; 2019 Oct 19. Available from: https://www.seafarerstrust.org/sites/default/files/node/publications/files/ST_MentalHealthReport_Final_Digital-1.pdf [Last accessed: 2025 Jan 29].

3. Institute for Health Metrics and Evaluation (IHME). Mental Health. 2023 [cited 2025 Jan 26] Available from: https://www.healthdata.org/research-analysis/health-risks-issues/mental-health [Last accessed: 2025 Jan 29].

4. World Population Review. Depression rates by contry 2024 [cited 2025 Jan 26] Available from: https://worldpopulation-review.com/country-rankings/depression-rates-by-country [Last accessed: 2025 Jan 29].

5. World Health Organization (WHO). Mental health at work. 2024 September 2. Available from: https://www.who.int/news-room/fact-sheets/detail/mental-health-at-work [Last accessed: 2024 Jan 29].

6. National Institute for Occupational Safety and Health (NIOSH). Risk factors for stress and burnout. 2024, April 23. Healthcare Workers. https://www.cdc.gov/niosh/healthcare/risk-factors/stress-burnout.html [Last accessed: 2025 Jan 29].

7. The American Institute of Stress. Workplace Stress. 2025, January 7. Available from: https://www.stress.org/workplace-stress/ [Last accessed: 2025 Jan 29].

8. Gonçalves SP, Vieira Dos Santos J, Figueiredo-Ferraz H, Gil-Monte PR, Carlotto MS. Editorial: Occupational health psychology: From burnout to well-being at work. Front Psychol. 2022 Nov 14;13:1069318. doi: 10.3389/fpsyg.2022.1069318. PMID: 36452389; PMCID: PMC9703053.

9. Chandra Sardar J, Sau A, Sardar M, Karmakar PR. Mental Health Status of Sailors of Haldia Dock Complex, West

Bengal. International Journal of Research and Review. 2020 Sep;**7**(9):317-321. Available from: https://www.ijrrjournal.com/IJRR_Vol.7_Issue.9_Sep2020/IJRR0044.pdf [Last accessed: 2025 Jan 29].

10. Oldenburg M, Jensen HJ, Wegner R. Burnout syndrome in seafarers in the merchant marine service. Int Arch Occup Environ Health. 2013 May 1;**86**(4):407-16. doi: 10.1007/s00420-012-0771-7. Epub 2012 Apr 21. PMID: 22526089.

11. Swift O. Social Isolation of Seafarers. ISWAN; 2015. Available from: https://www.iswan.org.uk/wp-content/uploads/Social-Isolation-Article-PDF-2.pdf [Last accessed: 2025 Jan 29].

12. Roberts SE, Jaremin B, Chalasani P, Rodgers SE. Suicides among seafarers in UK merchant shipping, 1919–2005. Occup Med (Chic Ill). 2010 Jan 1;**60**(1):54-61. doi: 10.1093/occmed/kqp133. Epub 2009 Oct 4. PMID: 19805397.

13. Jepsen JR, Zhao Z, van Leeuwen WMA. Seafarer fatigue: a review of risk factors, consequences for seafarers' health and safety and options for mitigation. Int Marit Health. 2015;**66**(2):106-17. doi: 10.5603/IMH.2015.0024. PMID: 26119681.

14. Carotenuto A, Fasanaro AM, Molino I, Sibilio F,Saturnino A, Traini E, et al. The Psychological General Well-Being Index (PGWBI) for assessing stress of seafarers on board merchant ships. Int Marit Health. 2013;**64**(4):215-20. doi: 10.5603/imh.2013.0007. PMID: 24408143.

15. Government of India. Ministry of Ports, Shipping and Waterways [Internet]. 2019 [cited 2024 Feb 24]. Employment of Indian seafarers grows by an unprecedented 35 percent this year. Press Information Bureau; 2019. Available from: https://pib.gov.in/Pressreleaseshare.aspx?PRID=1564700 [Last accessed: 2025 Jan 29].

16. Iversen RT. The mental health of seafarers. Int Marit Health. 2012;**63**(2):78-89. doi: 10.1016/0891-4222(94)00028- PMID: 7701092.

17. Felce D, Perry J. Quality of life: Its definition and measurement. Res Dev Disabil. 1995;**16**(1):51-74. doi: 10.1016/0891-4222(94)00028-8. PMID: 7701092.

18. Sirgy MJ, Reilly NP, Wu J, Efraty D. A Work-Life Identity Model of Well-Being: Towards a Research Agenda Linking Quality-of-Work-Life (QWL) Programs with Quality of Life (QOL). Appl Res Qual Life. 2008;**3**(3):181-202. https://doi.org/10.1007/s11482-008-9054-6.

19. Kim JH, Jang SN. Seafarers' Quality of Life: Organizational Culture, Self-Efficacy, and Perceived Fatigue. Int J Environ Res Public Health. 2018 Sep 30;**15**(10). doi: 10.3390/ijerph15102150. PMID: 30274349; PMCID: PMC6210239.

20. Beck AT, Ward CH, Mendelson M, Mock J, Erbaugh J. An Inventory for Measuring Depression. Arch Gen Psychiatry. 1961;**4**(6):561-71. doi: 10.1001/archpsyc.1961.01710120031004. PMID: 13688369.

21. Easton S, Van Laar D. User Manual for the Work-Related Quality of Life (WRQoL) Scale A Measure of Quality of Working Life. 2nd Ed. University of Portsmouth; 2018. Available from: WRQoL User manual 2nd Ed - ebook - Feb

2018 [Last accessed: 2025 February 6].

22. Zamora AA, Regencia ZJG, Crisostomo ME, Van Hal G, Baja ES. Effect of daily social media exposure on anxiety and depression disorders among cargo seafarers: a cross-sectional study. Int Marit Health. 2021;**72**(1):55-63. doi: 10.5603/IMH.2021.0008. PMID: 33829474.

23. Mampilli AJ, D'mello MK. Quality of life among seafarers aboard the government passenger ships at Kochi Port. Int Marit Health. 2022;**73**(3):143-9. doi: 10.5603/IMH.2022.0027. PMID: 36217970.

24. Singh H. Indian seafarers quitting sea career: disenchantment with Indian seafarers quitting sea career: disenchantment with prevailing conditions and lasting effects of the COVID-19 prevailing conditions and lasting effects of the COVID-19 pandemic pandemic. World Maritime University; 2022. Available from: https://commons.wmu.se/all_dissertations/2126/ [Last accessed: 2025 Jan 29].

25. Bao J, Li Y, Zheng G, Zhang P. Exploring into contributing factors to young seafarer turnover: empirical evidence from China. The Journal of Navigation. 2021 Jul 1;**74**(4):914-30. doi: https://doi.org/10.1017/S0373463321000230.

26. Pauksztat B, Andrei DM, Grech MR. Effects of the COVID-19 pandemic on the mental health of seafarers: A comparison using matched samples. Saf Sci. 2022 Feb 1;**146**:105542. doi: 10.1016/j.ssci.2021.105542. Epub 2021 Oct 19. PMID: 34744311; PMCID: PMC8556536.

27. Lucas D, Jego C, Jensen OC, Loddé B, Pougnet R, Dewitte JD, et al. Seafarers' mental health in the COVID-19 era: lost at sea? Int Marit Health. 2021;**72**(2):138-41. doi: 10.5603/IMH.2021.0023. PMID: 34212354.

28. Baygi F, Mohammadian Khonsari N, Agoushi A, Hassani Gelsefid S, Mahdavi Gorabi A, Qorbani M. Prevalence and associated factors of psychosocial distress among seafarers during COVID-19 pandemic. BMC Psychiatry. 2021 Dec 1;**21**(1):222. doi: 10.1186/s12888-021-03197-z. PMID: 33931081; PMCID: PMC8085649.

29. Abaya ARM, Roldan S, Ongchangco JCE, Ronquillo-Sarmiento RM, Sarmiento RFR. Repatriation rates in Filipino seafarers: a five-year study of 6,759 cases. Int Marit Health. 2015;**66**(4):189-95. doi: 10.5603/IMH.2015.0038. PMID: 26726888.

30. Fan S, Blanco-Davis E, Fairclough S, Zhang J, Yan X, Wang J, et al. Incorporation of seafarer psychological factors into maritime safety assessment. Ocean Coast Manag. 2023 Apr 15;**237**:106515. https://doi.org/10.1016/j.ocecoaman.2023.106515Get rights and content.

31. Baygi F, Mohammadian Khonsari N, Agoushi A, Hassani Gelsefid S, Mahdavi Gorabi A, Qorbani M. Prevalence and associated factors of psychosocial distress among seafarers during COVID-19 pandemic. BMC Psychiatry. 2021 Dec;**21**(1):1-9. Available from: https://bmcpsychiatry.biomedcentral.com/articles/10.1186/s12888-021-03197-z.

32. Jonglertmontree W, Kaewboonchoo O, Morioka I, Boonyamalik P. Mental health problems and their related factors among seafarers: a scoping review. BMC Public Health. 2022 Dec 1;**22**(1). 2022 Feb 11;22(1):282. doi:

10.1186/s12889-022-12713-z. PMID: 35148722; PMCID: PMC8840312.

33. Nittari G, Gibelli F, Bailo P, Sirignano A, Ricci G. Factors affecting mental health of seafarers on board merchant ships: A systematic review. Rev Environ Health. 2022 Oct 28;**39**(1):151-160. doi: 10.1515/reveh-2021-0070. PMID: 36302371.

Corresponding author: Dr. Varalakshmi Chandra Sekaran, Department of Global Public Health Policy and Governance, Prasanna School of Public Health, Manipal Academy of Higher Education, Manipal, Karnataka 576104, India
e-mail: varalakshmi.cs@manipal.edu

ORCID: 0000-0003-3319-3075