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Navigating the High Seas of Mental Health: Exploring the Prevalence of Depression, Stress, Anxiety, and Burnout Among Indian Seafarers

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ABSTRACT

The primary objective of this study is to investigate the extent to which depression, stress, anxiety, and burnout in Indian seafarers. The study collected data from 109 Indian seafarers through Google Forms from March 2023 to April 2023. Descriptive statistics and inferential statistics were used to summarize the data based on selected demographic factors. The results showed that Indian seafarers suffered from mild depression (Mean =13.54) Seafarers also suffer from moderate levels of anxiety (Mean= 10.81). The levels of stress are found to be of normal level (Mean=13.28). The average scores for the components of burnout, namely Disengagement, and Exhaustion, among seafarers are 20.03 (SD= 3.673) and 20.43 (SD= 4.051) respectively. These findings suggest that seafarers exhibit moderate levels of burnout. Also, the correlational analysis shows a positive moderate correlation between total scores of depression, anxiety, stress, and components of Burnout with a value of 0.392 at a 1 % level of significance. The study highlights the need for mental health interventions and support services for seafarers to prevent and manage mental health issues in this population.

Keywords: Depression, Anxiety, Stress, Seafaring, Burnout.

1. INTRODUCTION

The maritime industry holds significant importance in enabling international trade, with a widely acknowledged approximation suggesting that about 90% of global economic exchange relies on transportation via maritime pathways (IMO 2012). The fortunes of the shipping sector grow and fall in conjunction with the successes of world trade owing to the close association between the two. The shipping industry has seen a significant transformation over the past decades in response to accelerated globalization, more technology advancements, larger global trade, and numerous economic downturns. Because of its centrality to economic expansion and societal progress, the shipping sector indirectly contributes to all the SDGs outlined by the United Nations (Leea et al., 2016). The maritime workforce heavily relies on the invaluable contributions of seafarers, who are widely regarded as the primary stakeholders in this sector. A sailor, seaman, or seafarer is someone who works on merchant ships. Considering the work culture of the shipping industry, it is pertinent to acknowledge that seafaring ranks among the most perilous professions globally, as per the International Maritime Organization's report of 2014. This statement is supported by a multitude of studies and reports that have examined the physical and mental well-being of seafarers, as well as the various illnesses and factors that contribute to their mortality (Sąlyga & Juozulynas,2006; Wadsworth et al., 2008; Roberts et al., 2010). Apart from the elevated incidences of accidents and injuries

on board, the seafaring profession is also distinguished by a notable prevalence of suicide (Roberts and Marlow 2005). Working on the ship notably impacts the regular social life of individuals employed in this profession. As stated by Liang (2011), the seafaring profession is characterized by a dearth of interpersonal interaction attributed to restricted opportunities for direct contact with one's place of origin, infrequent and restricted or short shore leaves, inadequate staff, and personalized job responsibilities.

The working conditions present significant implications for the psychological well-being of seafarers and have been associated with exhaustion and psychological tension, both of which pose a threat to individuals who are already operating in a hazardous setting. Iversen's (2012) study reveals that the workplace stressors identified have profound implications, culminating in detrimental outcomes such as anxiety and depression for seafarers. Of particular concern is the alarming correlation between onboard bullying and harassment and the dire consequences it can trigger, including suicidal tendencies. The demanding work schedule, lifestyle, and job profile of seafarers render them highly susceptible to the pervasive presence of anxiety and depression, making these mental health afflictions the prevailing challenges they confront. The level of stress experienced by seafarers on board is contingent upon their rank and assigned job duties. Specifically, officers are subjected to elevated levels of stress because of their extensive duties to both personnel and material (Oldenburg et al., 2009). Contrary to depression, which stems from a neurochemical imbalance within the brain, burnout arises as a reaction to prolonged and chronic workplace stress (Orosz et al., 2017). Frequently, it results in an overabundance of energy expenditure. It is tough for seafarers who spend a lot of time on ships far from their usual social circle to find ways to cope. So, it is like seafarers are more likely to get burnt out. This is true for everyone on board, no matter their rank (Oldenburg et al., 2009).

Moreover, it is theorized that burnout and insomnia have a mutually reinforcing dynamic, wherein the presence of one condition is thought to serve as a predictor and catalyst for the onset and progression of the other over an extended period (Armon et al., 2008). The sleeping patterns of watch officers in seafaring are primarily determined by the type of watch system that is implemented. As an example, consider the comparison between a 2-watch system, where two officers are responsible for alternating 6-hour shifts, and a 3-watch system, which includes an additional officer. In both systems, officers adhere to a rotating schedule of 4-hour watches followed by 8 hours of downtime. Harma et al. (2008) conducted a study to investigate the impact of 2- and 3-watch systems on the level of sleepiness. The study utilized the Epworth Sleepiness Scale (ESS) and found that individuals in the 2-watch system, particularly bridge officers, exhibited a greater likelihood of experiencing severe daytime sleepiness. The distinct working and living conditions within the maritime industry are thought to contribute to the development of psychosocial health disorders, including burnout (Oldenburg et al.,2008). Most seafarers' jobs are safety-sensitive, making the evaluation of these disorders crucial. Both the workplace environment and the demands of the job encompass multiple possible triggers. Many aspects of ship maneuvering are mentally exhausting for deck and engine room officers and personnel (Elo,1985). The statistical data about the proportion of merchant navy officers who have died by suicide serves as evidence that mental health, quality of life, and overall well-being remain significantly suboptimal (Iversen, 2012). This necessitates further investigation in the field of seafarers' mental health. It is evident from the studies that there

exists a lot of global studies about mental health and its disorders among foreign seafarers but there does exist a paucity of studies regarding the same from Indian officers focusing on the parameters that disturb the mental health and those linking mental health disorders with professional burnout among those associated with the maritime industry. Consequently, it is imperative to conduct regular screenings and provide appropriate interventions for anxiety and depression to promote both physical and mental health, as well as enhance workplace productivity. Considering the aforementioned, there is a necessity to gain a more comprehensive understanding of the mental well-being of Indian seafarers. Therefore, the primary objective of this study is to evaluate the prevalence of burnout as well as mental health conditions such as depression, anxiety, and stress among Indian seafarers. The investigator aims to answer the following research questions:

1. Are there any differences between the levels of Depression, Anxiety, stress, and Burnout and its components (Disengagement and Exhaustion), among Indian seafarers based on various demographic variables?
2. Are there any relationships between Burnout and its components (Disengagement and Exhaustion), with Depression, Anxiety, and stress among Indian seafarers?

An in-depth study of the related literature is essential to assess the eligibility of the topic undertaken and thereby highlight its importance. The prevalence of depression, stress, anxiety, and burnout is a growing concern among seafarers worldwide. Research has demonstrated the significant impact of mental health issues on seafarers' job performance and safety. Given that seafaring is a significant profession in India, comprehending the prevalence of these mental health concerns among this specific group assumes crucial importance. This literature review intends to investigate the existing body of research concerning the occurrence of mental health issues, such as depression, stress, anxiety, and burnout, within the population of Indian seafarers.

A lot of seafarers fell asleep on duty due to acute tiredness. Watchkeepers on 6 on/6 off had less sleep than needed. Watchkeepers averaged 6.5 hours of sleep per day, split into a night-time session and a daytime "nap" (Horizon, 2015). Overtime working hours caused tiredness and fatigue in onboard seafarers. Leeuwen et al. (2013) documented instances of seafarers experiencing drowsiness and nodding off during their designated watch periods. According to Papachristou et al. (2015), prolonged periods of separation from their spouses or other family members emerged as a notable contributing factor to feelings of dissatisfaction among seafarers. Ulven et al. (2007) conducted a study indicating that the prolonged absence of a parent or spouse has detrimental effects on the psychological well-being of seafarers as well as their family members. Specifically, it was found that seafarers commonly experience increased levels of anxiety and despair during the days leading up to or following their departure or return. This separation-related distress extends to their family members, who also experience negative psychological consequences. The findings emphasize the profound impact of extended separation on the mental health of seafarers and highlight the importance of addressing this issue within the maritime industry. Because of this, there is a potential for disagreements to occur because of the absence of support from the seafarers' families.

In a study conducted by Oldenburg et al. (2013), it was discovered that seafarers who reported experiencing symptoms of depression and anxiety exhibited significant negative effects on their cognitive functioning. These effects included reduced cognitive capabilities, compromised decision-making abilities, and an increased likelihood of accidents. The study surveyed 251 seafarers on sleep and emotional exhaustion. Results of the study found that seafarers are more susceptible to stress and sleep issues because of lengthy shifts, multi-nationality, and extended working hours. The findings also emphasize the detrimental impact of mental health issues on seafarers' cognitive performance and reinforce the importance of addressing and managing these conditions within the maritime industry. Seafarers face additional stressors in their profession, which encompass responsibilities related to the crew and the ship. Furthermore, they encounter ever-changing job requirements, such as securing port clearance, navigating through various district routes, and fulfilling watch-keeping duties while at sea. These dynamic elements contribute to heightened stress levels among seafarers, underscoring the diverse occupational pressures they confront. In a study on psychological stress in merchant navy officers, revealed a correlation between high levels of stress and burnout among seafarers and adverse effects on vigilance and situational awareness, thereby posing risks to maritime operations. The research also concluded that seafaring is associated with mental, psychological, and physical stress, with prominent factors including separation from family, feelings of loneliness while on board, fatigue, the diverse nationalities of crew members, limited opportunities for recreational activities, and sleep deprivation. These various factors, including reduced cognitive functioning and fatigue, contribute to both immediate and long-term health consequences among seafarers, including acute impacts and the development of chronic diseases.

The mental well-being of seafarers is significantly influenced by organizational factors. A study by Day and Nielsen (2017) highlighted the importance of supportive leadership and organizational culture in mitigating mental health issues. Factors such as job autonomy, social support, fair treatment, and access to recreational facilities have been linked to lower levels of stress and better mental well-being among seafarers. Stigma, fear of job loss, and limited access to mental health services at sea contribute to underreporting and inadequate support for seafarers (Li et. al., 2022).

Several best practices and interventions have been proposed to support the mental health of seafarers. These include implementing mental health training programs, creating peer support networks, providing access to confidential counselling services, and promoting work-life balance through appropriate rest periods and recreation opportunities (Cvenkel, 2021).

The literature review reveals the significant impact of mental health on job performance, safety, and the well-being of Indian seafarers. Organizational factors, barriers to seeking help, and the unique challenges posed by the COVID-19 pandemic further contribute to the mental health issues faced by seafarers. Implementing interventions and best practices that address these factors is crucial to promote the mental well-being of Indian seafarers and ensuring a resilient and sustainable maritime industry. The shipping industry and policymakers need to address these mental health issues and provide support for seafarers to improve their mental health and well-being. Further research should focus on evaluating the effectiveness of specific interventions and identifying novel approaches to support seafarers' mental health.

The investigator formulated the following objectives for this study.

1. To assess the occurrence rates of depression, stress, anxiety, burnout, and its components (disengagement and exhaustion) among Indian seafarers.
2. To identify the effect of demographic factors on depression, stress, anxiety, and burnout and its components (Disengagement and Exhaustion), among Indian seafarers.
3. To examine the relationship between depression, stress, anxiety, and burnout and its components (Disengagement and Exhaustion), among Indian seafarers.

Based on the review of related literature, the investigator formulated the following hypotheses.

1. Depression among Indian seafarers

H_{01}: It was expected that scores of depression do not vary on the basis of the age of the seafarers.
H_{02}: It was expected that scores of depression do not vary on the basis of the relationship status of the seafarer.
H_{03}: Deck officers were expected to score similar to Engine officers on Depression.
H_{04}: It was expected that no differences in the scores of depression would emerge between seafarers based on the type of vessel they are sailing.
H_{05}: It was expected that no differences in the scores of depression would emerge between seafarers based on the number of years they have served.

2. Anxiety among Indian seafarers

H_{01}: It was expected that scores of anxiety do not vary on the basis of the age of the seafarer.

H_{02}: It was expected that scores of anxiety do not vary on the basis of the relationship status of the seafarer.
H_{03}: Deck officers were expected to score similar to Engine officers on anxiety.
H_{04}: It was expected that no differences in the scores of anxiety would emerge between seafarers based on the type of vessel they are sailing.
H_{05}: It was expected that no differences in the scores of anxiety would emerge between seafarers based on the number of years they have served.

3. Stress among Indian seafarers

H_{01}: It was expected that scores of stress do not vary on the basis of the age of the seafarer.
H_{02}: It was expected that scores of stress do not vary on the basis of the relationship status of the seafarer.
H_{03}: Deck officers were expected to score similar to Engine officers on stress.
H_{04}: It was expected that no differences in the scores of stress would emerge between seafarers based on the type of vessel they are sailing.
H_{05}: It was expected that no differences in the scores of stress would emerge between seafarers based on the number of years they have served.

4. Disengagement among Indian seafarers

H_{01}: It was expected that scores of disengagement do not vary on the basis of the age of the seafarer.

H_{02}: It was expected that scores of disengagement do not vary on the basis of the relationship status of the seafarer.
H_{03}: Deck officers were expected to score similar to Engine officers on disengagement.
H_{04}: It was expected that no differences in the scores of disengagement would emerge between seafarers based on the type of vessel they are sailing.
H_{05}: It was expected that no differences in the scores of disengagement would emerge between seafarers based on the number of years they have served.

5. Exhaustion among Indian seafarers

H_{01}: It was expected that scores of exhaustion do not vary on the basis of the age of the seafarer.
H_{02}: It was expected that scores of exhaustion do not vary on the basis of the relationship status of the seafarer.
H_{03}: Deck officers were expected to score similar to Engine officers on exhaustion.
H_{04}: It was expected that no differences in the scores of exhaustion would emerge between seafarers based on the type of vessel they are sailing.
H_{05}: It was expected that no differences in the scores of exhaustion would emerge between seafarers based on the number of years they have served.

6. **Correlation of Burnout and its components with other variables among Indian seafarers.**

H_{01}: Burnout along with its component of Exhaustion and Disengagement were expected to be uncorrelated with Depression, Anxiety, and Stress.

STUDY DESIGN

Considering that seafaring is a career with high mobility, a web-based survey was designed. A cross-sectional investigation was undertaken to collect data from seafarers on board from March 2023 to April 2023. Standardized questionnaires, including the *Depression Anxiety and Stress Scale (DASS-42*) and the *Oldenburg Burnout Inventory*, were administered to the participants via Google Forms. The questionnaire for the study included items on demographics like “Age of Seafarer”, “Relationship Status”, “Role of Seafarer”, “Operating Vessel”, and “Number of Years Served”. The study encompassed seafarers of Indian descent who were employed in different job roles (engine department and deck department) of merchant ships that sailed internationally as well as within Indian waters. Convenient sampling technique was used. The questionnaire was administered to a sampling frame of 120 seafarer respondents, of which 109 respondents were deemed eligible for further analysis in the study after scrutiny. Only those Indian seafarers were included in the study who were currently on board and were at home post sailing. Informed consent was obtained from the participants, and confidentiality and anonymity were also maintained throughout the study.

MEASURES

Depression Anxiety and stress scale (DASS-42)

The DASS-42 (Depression, Anxiety, and Stress Scale) is a self-report questionnaire that consists of 42 items, each rated on a 4-point scale (0-3). The purpose of the questionnaire is to evaluate symptoms associated with depression, anxiety, and stress (Lovibond & Lovibond, 1995). The DASS-42 questionnaire includes three distinct subscales to measure specific symptoms. The Depression subscale evaluates indicators such as dysphoria, hopelessness, devaluation of life, self-deprecation, lack of interest/involvement, anhedonia, and inertia. The Anxiety subscale examines symptoms related to autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious affect. Lastly, the Stress subscale focuses on symptoms like difficulty relaxing, nervous arousal, being easily upset or agitated, irritable behavior, and over-reactivity(Lovibond & Lovibond, 1995). The scores for depression, anxiety, and stress are determined by adding up the relevant item scores. Specifically, the depression scale consists of items 3, 5, 10, 13, 16, 17, 21, 24, 26, 31, 34, 37, 38, and 42, while the anxiety scale includes items 2, 4, 7, 9, 15, 19, 20, 23, 25, 28, 30, 36, 40, and 41. Lastly, the stress scale is made up of items 1, 6, 8, 11, 12, 14, 18, 22, 27, 29, 32, 33, 35, and 39. The scores for each subscale can range from 0 to 42, with higher scores indicating more severe symptoms. For depression, scores can range from 0-9 as normal mood, 10-13 indicate mild depression, 14-20 indicate moderate depression, 21-27 indicate severe depression, and 28+ indicate extremely severe depression. On the anxiety scale scores of 0-7 indicate normal anxiety levels, 8-9 indicate mild anxiety, 10-14 indicate moderate anxiety, 15-19 indicate severe anxiety, and 20+ indicate extremely severe anxiety. Scores of 0-14 indicate normal stress levels, 15-18 indicate mild stress, 19-25 indicate moderate stress, 26-33 indicate severe stress, and 34+ indicate extremely severe stress. Cronbach's alpha coefficients for the three subscales of the DASS range from 0.91 for depression, 0.84 for anxiety, and 0.90 for stress, indicating high internal consistency. The test-retest reliability coefficients range from 0.70 to 0.96, indicating that the scale is stable over time (Lovibond & Lovibond, 1995).

Oldenburg Burnout Inventory (OLBI)

The Oldenburg Burnout Inventory (OLBI) is a self-administered questionnaire designed to evaluate burnout symptoms. It comprises 16 items that assess burnout across two dimensions namely exhaustion and disengagement (Demerouti & Bakker, 2008). The exhaustion dimension measures the physical and emotional exhaustion of the individual, whereas the disengagement dimension measures the individual's negative attitude towards work and feelings of reduced work performance and disconnection from work. The exhaustion subscale of the OLBI encompasses eight items aimed at gauging the extent of physical, emotional, and cognitive exhaustion encountered by the respondent. The disengagement subscale of the OLBI also consists of eight items that assess the respondent's negative attitude towards work, reduced work performance, and feelings of disconnection from work. Respondents provide ratings for each item on a 4-point Likert scale, ranging from 1 (strongly disagree) to 4 (strongly agree). The scores for the exhaustion and disengagement subscales are calculated separately and can range from 8 to 32, with higher scores indicating higher levels of burnout. The total score for the OLBI is calculated by adding the scores for the exhaustion and disengagement subscales.

For both subscales, scores between 8 and 16 are considered low, scores between 17 and 25 are considered moderate, and scores between 26 and 32 are considered high (Demerouti & Bakker, 2008). The OLBI has shown satisfactory internal consistency and test-retest reliability. The Cronbach's alpha coefficients for the two subscales of the OLBI range from 0.74 to 0.87, indicating reliable internal consistency. Test-retest reliability coefficients range from 0.70 to 0.81, indicating that the scale is stable over time (Halbesleben & Demerouti, 2005; Demerouti & Bakker, 2008).

2. METHOD

The data obtained from the questionnaires administered through Google Forms were processed and refined for analysis. This involved identifying missing or incomplete responses and detecting any outliers or data errors. The statistical software SPSS version 20 was utilized for data analysis. Descriptive statistics were employed to summarize the data with respect to relevant demographic variables, offering a comprehensive portrayal of the occurrence and intensity of depression, stress, anxiety, and burnout within the Indian seafarer population. Furthermore, these statistics helped identify any noteworthy patterns or trends within the data.

3. RESULTS AND DISCUSSION

Demographic details

Table 1: Distribution of the Study sample Based on Socio-demographic Characteristics

Demographic Factors	**Frequency(n=109)**	**Percentage**
Age of Seafarers		
20 – 30	33	30.27
30-40	46	42.2
40-50	16	14.678
50-60	6	5.504
> 60	8	7.339
Relationship status		
IN A RELATIONSHIP	25	22.9
MARRIED	62	56.9
SINGLE	22	20.2
Role of seafarer		
DECK DEPARTMENT	71	65.1
ENNG. DEPARTMENT	38	34.9
Operating vessel		

BULK CARRIER	21	19.3
CHEMICAL TANKER	9	8.3
CONTAINER	14	12.8
CRUDE OIL/OIL TANKER	39	35.8
GAS CARRIER	26	23.9
Number of years served		
0 - 5 YEARS	29	26.6
10-15 YEARS	23	21.1
15 YEARS AND ABOVE	25	22.9
5-10 YEARS	32	29.4

Table 1 gives a detailed description of the socio-demographic characteristics of the sample of Indian seafarers under study. The mean age of the sample is 35.96 with SD= 11.109 with 56.9 % of seafarers married, 22.9% in a relationship, and 20.2 % single. Findings also suggest that 65.1% are deck officers. The maximum number of seafarers serve crude oil tankers/oil tankers (35.8%), followed by gas carriers (23.9%), bulk carriers (19.3%), containers (12.8%), and Chemical tankers (8.3%). The length of service of seafarers under study varies from 5-10 years (29.4%), 0-5 years (26.6%), 15 years and above (22.9%), and 10-15 years (21.1%).

Table 2: Descriptive statistics for Depression, Anxiety, Stress, Disengagement, and Exhaustion

VARIABLES	N	Mean	Median	Variance	Std. Deviation	Minimum	Maximum	Range	Interquartile Range	Skewness	Kurtosis
DEPRESION	109	13.54	13.00	51.343	7.165	1	26	25	12	-.146	-.917
ANXIETY	109	10.81	10.00	42.824	6.544	1	24	23	12	.431	-.912
STRESS	109	13.28	11.00	87.057	9.330	0	36	36	17	.796	-.162
DISENGAGEMENT	109	20.03	19.00	13.490	3.673	12	31	19	6	.425	-.120
EXHAUSTION	109	20.43	20.00	16.414	4.051	13	30	17	6	.420	-.354

Table 2 depicts the descriptive statistics for the variables under study which shows that the sample of seafarers under study suffer from mild depression with a mean score of 13.54 and SD= 7.165. Seafarers also suffer from moderate levels of anxiety with a mean score of 10.81 and SD= 6.544. The levels of stress are found to be of normal level with mean scores of 13.28 and SD= 9.330. The components of burnout i.e., Disengagement and Exhaustion have the mean scores of 20.03(SD= 3.673) and 20.43 (SD= 4.051) respectively which depicts that the seafarers have moderate levels of burnout.

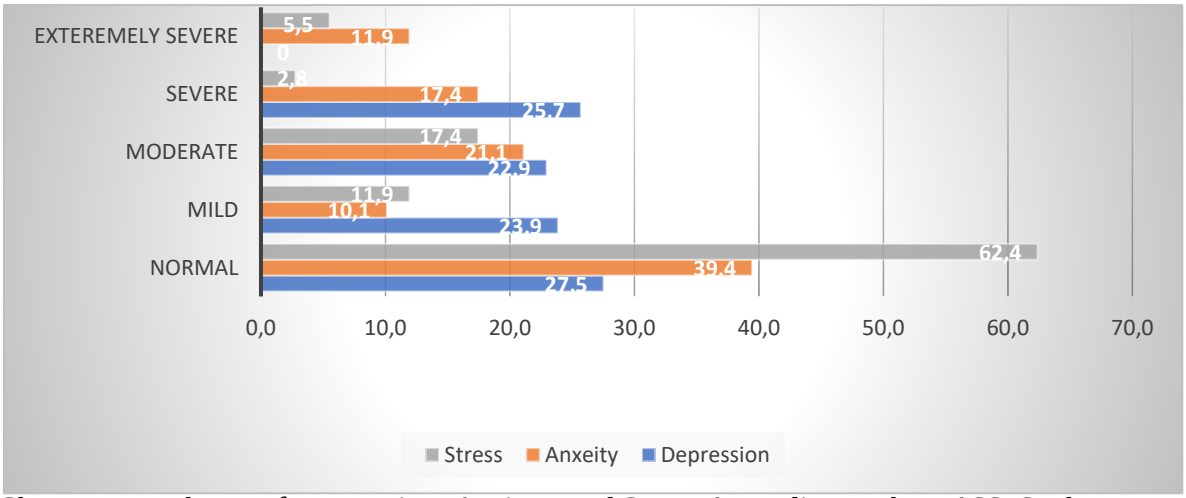

Chart I: Prevalence of Depression, Anxiety, and Stress According to the DASS Scale.

Chart 1 offers insights into the levels of depression, anxiety, and stress experienced by individuals across various categories based on the DASS Scale, each level represents the severity of the respective psychological state. It has been observed for depression, that 27.5% of individuals fall within the normal range, indicating a relatively stable mental state. The mild category includes 23.9% of individuals, suggesting a slight elevation in depressive symptoms. The moderate level comprises 22.9% of individuals, indicating a more noticeable impact on their mental well-being. In the severe category, accounting for 25.7% of individuals, the prevalence of significant depression symptoms is evident. Interestingly, there is a complete absence of individuals classified as extremely severe for depression.

Moving on to anxiety, the percentages reveal that the largest proportion, 39.4% of individuals, falls within the normal range. This suggests a relatively calm state of mind for this group. The mild category represents 10.1% of individuals, indicating a minor level of anxiety experienced. For the moderate level, 21.1% of individuals demonstrate a more pronounced impact on their anxiety levels. In the severe category, 17.4% of individuals experience significant anxiety symptoms. Finally, the extremely severe category accounts for 11.9% of individuals, signifying a notable presence of extreme anxiety.

Examining stress levels, it was found that the majority, 62.4% of individuals, fall within the normal range, indicating a relatively manageable level of stress. The mild category consists of 11.9% of individuals, suggesting a minor elevation in stress levels. In the moderate category, 17.4% of individuals experience a more noticeable impact on their stress levels. The severe category encompasses 2.8% of individuals, indicating a significant impact on their overall well-being due to high-stress levels. Finally, the extremely severe category comprises 5.5% of individuals, suggesting a notable presence of extreme stress.

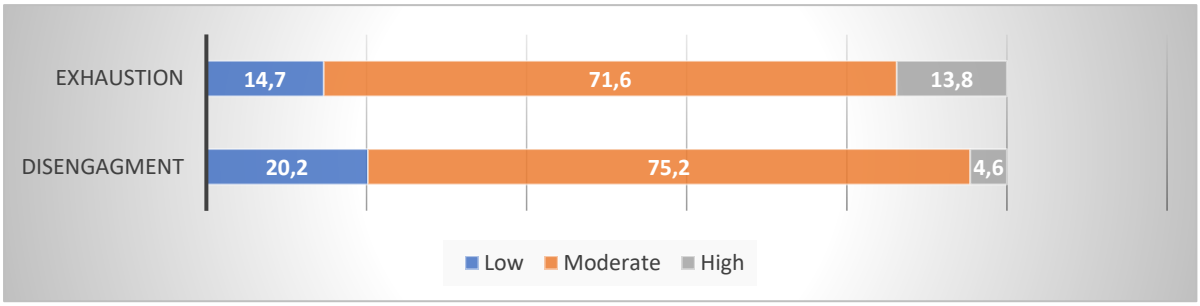

Chart 2: Prevalence of Burnout (Exhaustion and disengagement) based on Oldenburg's Burnout Inventory.

Chart 2 illustrates the distribution of Indian seafarers across different levels of disengagement and exhaustion at three levels: Low, Moderate, and High. Disengagement measures the degree of disinterest or lack of involvement. The percentages indicate that 20.2% of respondents have a low level of disengagement, 75.2% have a moderate level, and 4.6% have a high level. Exhaustion represents the level of extreme tiredness experienced by individuals. The chart shows that 14.7% of respondents have low exhaustion, 71.6% have moderate exhaustion, and 13.8% have high exhaustion.

Table 3: Normality Tests for variables under study

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
DISENGAGEMENT	.151	109	.000	.962	109	.003
EXHAUSTION	.105	109	.005	.968	109	.009
STRESS	.155	109	.000	.911	109	.000
ANXIETY	.125	109	.000	.938	109	.000
DEPRESION	.108	109	.003	.957	109	.001

a. Lilliefors Significance Correction

To check the normality of the data collected for the respective variables under study, Shapiro-Wilk Test was conducted and the results showed that the p-values of each variable are less than 0.05, and hence, the null hypothesis of normality is rejected. The tests of normality are given in Table 3. After examining the normality of the data, and having the condition of non-normality met, non-parametric inferential statistics were used to test for significant differences or associations between variables Depression, Stress, Anxiety, and burnout and its components (Disengagement and Exhaustion), among Indian seafarers.

The investigator tried to assemble the results of the study in the form of hypothesis formulations.

1. Depression among Indian seafarers

Table 4: Depression levels with respect to various demographic factors

HYPOTHESIS TESTING SUMMARY -DEPRESSION			
NULL HYPOTHESIS	**TEST**	**SIGNIFICANT VALUE**	**DECISION**
$H_{01:}$ It was expected that scores of depression does not varies on the basis of age of the mariner.	Independent Sample Krukshal Wallis Test	**0.065**	Retains null hypothesis
$H_{02:}$ It was expected that scores of depression does not varies on the basis of the relationship status of the mariner.	Independent Sample Krukshal Wallis Test	**0.081**	Retains null hypothesis
H_{03}: Deck officers were expected to score similar to Engine officers on Depression.	Independent Sample Mann Whitney U Test	**0.142**	Retains null hypothesis
$H_{04:}$ It was expected that no differences in the scores of depression would emerge between seafarers based on the type of vessel they are sailing.	Independent Sample Krukshal Wallis Test	**0.62**	Retains null hypothesis
H_{05}: It was expected that no differences in the scores of depression would emerge between seafarers based on the number of years they have served.	Independent Sample Krukshal Wallis Test	**0.751**	Retains null hypothesis

The results of Table 4 show that levels of depression were compared against various demographic variables using the Independent Sample Kruskal Wallis test and the Independent Sample Mann Whitney U test. It was found that the calculated p values of depression were found to be higher than the critical p value i.e., 0.05 for all the demographic variables under study hence enough evidence does not support the statistical rejection of the null hypothesis and hence all the null hypotheses related to depression are accepted. This means all seafarers, regardless of age, relationship status, professional role (i.e., Deck and Engine department), the type of vessel they are sailing on, and the number of years they have sailed, face depression.

2. Anxiety among Indian seafarers

Table 5: Anxiety levels with respect to various demographic factors

HYPOTHESIS TESTING SUMMARY -ANXIETY			
NULL HYPOTHESIS	**TEST**	**SIGNIFICANT VALUE**	**DECISION**
$H_{01:}$ It was expected that scores of anxiety does not varies on the basis of age of the mariner.	Independent Sample Krukshal Wallis Test	**0.294**	Retains null hypothesis
$H_{02:}$ It was expected that scores of anxiety does not varies on the basis of the relationship status of the mariner.	Independent Sample Krukshal Wallis Test	**0.136**	Retains null hypothesis
H_{03}: Deck officers were expected to score similar to Engine officers on anxiety.	Independent Sample Mann Whitney U Test	**0.02**	Rejects null hypothesis
$H_{04:}$ It was expected that no differences in the scores of anxiety would emerge between seafarers based on the type of vessel they are sailing.	Independent Sample Krukshal Wallis Test	**0.549**	Retains null hypothesis
H_{05}: It was expected that no differences in the scores of anxiety would emerge between seafarers based on the number of years they have served.	Independent Sample Krukshal Wallis Test	**0.682**	Retains null hypothesis

Table 5 shows that anxiety levels were compared against various demographic variables using the Independent Sample Kruskal Wallis test and the Independent Sample Mann-Whitney U test. It was found that the calculated p-values of anxiety found to be higher than 0.05 for all the demographic variables except for the role of the seafarer. And hence enough evidence does not support the statistical rejection of the null hypothesis and hence all the null hypotheses related to anxiety are accepted. The calculated p-value for the demographic variable *role of seafarer* was found to be 0.02 which is less than the critical p-value i.e., 0.05. And hence the null hypothesis stating that *deck officers were expected to score similarly to engine officers on anxiety* is rejected. This means there exists a statistically significant difference between the mean scores of anxiety of deck officers and engine officers.

3. Stress among Seafarers

Table 6: Stress levels with respect to various demographic factors

HYPOTHESIS TESTING SUMMARY - STRESS			
NULL HYPOTHESIS	**TEST**	**SIGNIFICANT VALUE**	**DECISION**
H01: It was expected that scores of stress does not varies on the basis of age of the mariner.	Independent Sample Krukshal Wallis Test	**0.134**	Retains null hypothesis
H02: It was expected that scores of stress does not varies on the basis of the relationship status of the mariner.	Independent Sample Krukshal Wallis Test	**0.02**	Rejects null hypothesis
H03: Deck officers were expected to score similar to Engine officers on stress.	Independent Sample Mann Whitney U Test	**0.227**	Retains null hypothesis
H04: It was expected that no differences in the scores of stress would emerge between seafarers based on the type of vessel they are sailing.	Independent Sample Krukshal Wallis Test	**0.33**	Retains null hypothesis
H05: It was expected that no differences in the scores of stress would emerge between seafarers based on the number of years they have served.	Independent Sample Krukshal Wallis Test	**0.53**	Retains null hypothesis

The results of Table 6 shows that the calculated p-values of stress were found to be higher than 0.05 for all the demographic variables except for the *relationship status* of the seafarer. And hence enough evidence does not support the statistical rejection of the null hypothesis and hence all the corresponding null hypotheses related to stress are accepted. The calculated p-value for the demographic variable *relationship status of seafarers* was found to be 0.02 which is less than the critical p-value i.e., 0.05. And hence the null hypothesis stating that the mean scores of stress among Indian seafarers do not vary with the relationship status they are in is rejected.

4. Disengagement among Seafarers

Table 7: Disengagement levels with respect to various demographic factors

HYPOTHESIS TESTING SUMMARY -DISENGAGEMENT			
NULL HYPOTHESIS	**TEST**	**SIGNIFICANT VALUE**	**DECISION**
$H_{01:}$ It was expected that scores of disengagement does not varies on the basis of age of the mariner.	Independent Sample Krukshal Wallis Test	**0.002**	Rejects null hypothesis
$H_{02:}$ It was expected that scores of Disengagement does not varies on the basis of the relationship status of the mariner.	Independent Sample Krukshal Wallis Test	**0.502**	Retains null hypothesis
H_{03}: Deck officers were expected to score similar to Engine officers on Disengagement.	Independent Sample Mann Whitney U Test	**0.312**	Retains null hypothesis
$H_{04:}$ It was expected that no differences in the scores of disengagement would emerge between seafarers based on the type of vessel they are sailing.	Independent Sample Krukshal Wallis Test	**0.006**	Rejects null hypothesis
H_{05}: It was expected that no differences in the scores of disengagment would emerge between seafarers based on the number of years they have served.	Independent Sample Krukshal Wallis Test	**0**	Rejects null hypothesis

The results of Table 7 show that the calculated p values of disengagement were found to be higher than 0.05 for all the demographic variables like *relationship status* and *role of the seafarer*. Whereas the calculated p values for demographic variables *Age, type of vessel, and number of years served* were found to be less than 0.05. And hence enough evidence does not support the statistical rejection of the null hypothesis and hence all the corresponding null hypotheses of disengagement related to *relationship status* and *role of seafarer* are accepted unlike those null hypotheses related to *age, type of vessel, and number of years served* are rejected.

5. Exhaustion among seafarers

Table 8: Disengagement levels with respect to various demographic factor

HYPOTHESIS TESTING SUMMARY - EXHAUSTION			
NULL HYPOTHESIS	**TEST**	**SIGNIFICANT VALUE**	**DECISION**
H01: It was expected that scores of exhaustion does not varies on the basis of age of the mariner.	Independent Sample Krukshal Wallis Test	**0.005**	Rejects null hypothesis
H02: It was expected that scores of exhaustion does not varies on the basis of the relationship status of the mariner.	Independent Sample Krukshal Wallis Test	**0.045**	Rejects null hypothesis
H03: Deck officers were expected to score similar to Engine officers on exhaustion.	Independent Sample Mann Whitney U Test	**0.612**	Retains null hypothesis
H04: It was expected that no differences in the scores of exhaustion would emerge between seafarers based on the type of vessel they are sailing.	Independent Sample Krukshal Wallis Test	**0.101**	Retains null hypothesis
H05: It was expected that no differences in the scores of exhaustion would emerge between seafarers based on the number of years they have served.	Independent Sample Krukshal Wallis Test	**0.001**	Rejects null hypothesis

The results of Table 8 show that the calculated p values of Exhaustion were found to be higher than 0.05 for demographic variables like the *role of seafarer* and *type of vessel*. Whereas the calculated p values for demographic variables *Age, relationship status, and number of years served* were found to be less than 0.05. And hence enough evidence does not support the statistical rejection of the null hypothesis and hence all the corresponding null hypotheses of disengagement related to the *role of seafarer* and *type of vessel* are accepted unlike those null hypotheses related to *Age, relationship status, and number of years served* are rejected.

6. Correlational analysis of variables

Table 9: Correlational analysis of variables under study

Correlations

			depression	anxiety	stress	exhaution	disegagement
Spearman's rho	depression	Correlation Coefficient	1.000	.870**	.890**	.371**	.274**
		Sig. (2-tailed)	.	.000	.000	.000	.004
		N	109	109	109	109	109
	anxiety	Correlation Coefficient	.870**	1.000	.845**	.414**	.306**
		Sig. (2-tailed)	.000	.	.000	.000	.001
		N	109	109	109	109	109
	stress	Correlation Coefficient	.890**	.845**	1.000	.445**	.295**
		Sig. (2-tailed)	.000	.000	.	.000	.002
		N	109	109	109	109	109
	exhaution	Correlation Coefficient	.371**	.414**	.445**	1.000	.792**
		Sig. (2-tailed)	.000	.000	.000	.	.000
		N	109	109	109	109	109
	disegagement	Correlation Coefficient	.274**	.306**	.295**	.792**	1.000
		Sig. (2-tailed)	.004	.001	.002	.000	.
		N	109	109	109	109	109

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

The 2 tailed correlational analysis of the variables under study at 0.01 level of significance depicted in Table 9 suggests that depression is moderately positively correlated to exhaustion with rho= 0.371 and, disengagement with rho=0.274. Anxiety is also moderately positively

correlated to exhaustion with rho=0.414 and to disengagement with rho=0.306. Stress is found to be in moderate positive correlation with exhaustion and disengagement with rho values of 0.445 and 0.295 respectively. This suggests that depression, Anxiety, and stress were found to be positively correlated with burnout and its components. Hence, the hypothesis stating *Burnout along with its component of Exhaustion and Disengagement were expected to be uncorrelated with Depression, Anxiety, and Stress was* found to be rejected.

DISCUSSION

The findings from the study shed light on the mental health difficulties encountered by the surveyed group of Indian seafarers, offering valuable insights into the prevalence of depression, stress, anxiety, and burnout within this population. The sample of seafarers under study suffers from mild depression with a mean score of 13.54 and moderate levels of anxiety with a mean score of 10.81. The levels of stress are found to be of normal level with mean scores of 13.28. It was also seen that a quarter of sampled seafarers faced severe depression and around 23% of them faced moderate to mild depression. Around 40% of respondents faced normal or no levels of anxiety whereas around 12 % of them faced extremely severe anxiety. Examining stress levels, we find that the majority, 62.4% of individuals, fall within the normal range, indicating a relatively manageable level of stress. The severe category encompasses 2.8% of individuals, indicating a significant impact on their overall well-being due to high-stress levels. Finally, the extremely severe category comprises 5.5% of individuals, suggesting a notable presence of extreme stress. The demanding nature of their profession, including long working hours, physical strain, and the isolated and challenging environment at sea, contribute to heightened stress and anxiety levels. These findings underscore the importance of addressing work-related stressors and providing adequate support systems to mitigate these mental health issues.

Burnout was another significant concern identified in the study. The mean scores for the components of burnout, namely Disengagement and Exhaustion, are reported as 20.03 (SD=3.673) and 20.43 (SD=4.051) respectively. These results indicate that seafarers exhibit moderate levels of burnout. The percentages indicate that 20.2% of individuals have a low level of disengagement, 75.2% have a moderate level, and 4.6% have a high level. The findings also suggest that 14.7% of individuals have low exhaustion, 71.6% have moderate exhaustion, and 13.8% have high exhaustion. The seafarers included in the sample reported experiencing burnout, which manifested as emotional exhaustion, depersonalization, and diminished personal accomplishment. The high-pressure work environment, prolonged periods away from home, and limited leisure time contribute to the risk of burnout among seafarers.

The mental health issues identified can significantly impact seafarers' well-being, job performance, and safety. Depressed and anxious seafarers may struggle with cognitive functioning, decision-making, and situational awareness, which can compromise the safety of the crew and the vessel. The prevalence of burnout can lead to decreased job satisfaction, increased turnover rates, and disruptions in operations. To address these implications, various recommendations can be proposed. Implementing mental health support programs, enhancing awareness and training, strengthening collaboration between stakeholders, and addressing regulatory and policy gaps are key steps toward supporting the mental health of Indian seafarers. These recommendations aim to improve mental health support infrastructure,

enhance awareness and training, foster collaboration, and ensure appropriate policies and guidelines are in place.

In conclusion, the findings of the study highlight the importance of implementing proactive strategies to tackle mental health issues among Indian seafarers in order to enhance job performance and safety, and create a healthier and more sustainable work environment.

4. CONCLUSION

The study identifies a notable prevalence of depression, with a considerable proportion of seafarers experiencing symptoms ranging from mild to severe based on the DASS 42 scale. Also, the prevalence of burnout was checked upon using OLBI. The sample of seafarers under study suffers from mild depression with a mean score of 13.54 and moderate levels of anxiety with a mean score of 10.81. The levels of stress are found to be of normal level with mean scores of 13.28. It has been observed for depression, 27.5% of individuals fall within the normal range followed by mild category (23.9%), moderate (22.9%), and severe category (25.7%) of individuals. Interestingly, there is a complete absence of individuals classified as extremely severe for depression. Moving on to anxiety, the percentages reveal that 39.4% of individuals, fall within the normal range followed by mild category (10.1%), moderate level (21.1%), severe category, (17.4%), and extremely severe (11.9%) of individuals. Examining stress levels, it was found that the majority, 62.4% of individuals, fall within the normal range, indicating a relatively manageable level of stress followed by mild category (11.9%), moderate category (17.4%), severe category (2.8%) and extremely severe category (5.5%) of individuals.

Burnout was another significant concern identified in the study. The components of burnout i.e., Disengagement and Exhaustion have the mean scores of 20.03(SD= 3.673) and 20.43 (SD= 4.051) respectively which depicts that the seafarers have moderate levels of burnout. The percentages indicate that 20.2% of respondents have a low level of disengagement, 75.2% have a moderate level, and 4.6% have a high level. Exhaustion represents the level of extreme tiredness experienced by individuals. The chart shows that 14.7% of respondents have low exhaustion, 71.6% have moderate exhaustion, and 13.8% have high exhaustion. The implications of the research findings are substantial for both seafarers and the maritime industry. It suggests the necessity of conducting additional research to evaluate the impact of COVID-19 on seafarers' mental health. Furthermore, it stresses the importance of conducting a qualitative study to investigate the predictors and patterns underlying the processes that lead to mental health challenges among seafarers.

LIMITATIONS

There are several potential limitations of this study. Firstly, self-reporting bias may affect the accuracy of the data collected. Secondly, the study only focuses on Indian seafarers who are currently employed and may not include those who have left the industry due to mental health issues or other reasons hence, the findings may not be generalizable to seafarers from other countries or regions. Finally, the study will only provide a snapshot of mental health issues

among seafarers, and longitudinal studies may be needed to explore changes in mental health over time.

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