TEST Engineering & Management

November-December 2019
ISSN: 0193-4120 Page No. 6305 - 6310

Proliferation of Occupational Stress among Indian Seafarers employed in Foreign going Ships

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Article Info
Volume 81
Page Number: 6305 - 6310
Publication Issue:
November-December 2019

Article History
Article Received: *5 March 2019*
Revised: *18 May 2019*
Accepted: *24 September 2019*
Publication: *28 December 2019*

Abstract:

Stress is considered to be the most important aspect for the existence of human beings in this world and more importantly the occupational stress is considered to be the most crucial factor for the wellbeing of the employees of the organizations or to the people who are involved in work life. The occupational stress is present in employees who are working in all types of organizations including the organizations in which the Indian seafarers are working. The occupational stress is much more predominant and are also on the rise with regard to the seafarers who typically work on-board the ships which are considered to be foreign going in nature. The increase in occupational stress of seafarers may be due to many factors which are called as stressors. The stressors will put the seafarers in greater stress in accomplishing the tasks that they are intending to do on the ships. The reason may be due to the long working hours on the ships, the loneliness on the ships and other predominant factors. The researchers have proved that the occupational stress is one of the most vital factors for losing concentration while working on the stress which will lead to ship collisions. There are several factors which will contribute to the occupational stress which can be classified under physical stress, psychological stress and environmental stresses. The diversion while accomplishing the duty on board the ships will definitely lead to human error which will be really catastrophic. The Indian seafarers will intend to work for long hours due to various reasons which will ultimately increase the stress level in accomplishing the tasks. The research article identifies the occupational stress factors which makes the seafarers to struggle while doing the tasks on board the ships.

Keywords: *Mariner, Seafarer, Fatigue, Occupational Stress, Stress Indicators, Effect of Stress, Stress level, Ships, IMO.*

I. INTRODUCTION

The occupational stress is considered to be one of the pitfalls in the work life of any employees who are working in the organizations. The occupational stress reduces the efficiency and productivity of employees to a greater extent which will make the employees to commit drastic mistakes in the work spot risking their life and materials used in production. In the case of shipping transportation of cargoes from one place to another place, the occupational stress plays a major role in committing mistakes while accomplishing the tasks related to everyday routine. The ship is navigated from one port to another port for a long period of time thereby making the seafarers or mariners to incur themselves in greater occupational stress. The reason behind that would be the monotonous work done by the seafarers. Many a times, the seafarers commit mistakes by doing things wrongly or taking a wrong decision while navigating the ship which will end up in grounding of ships or will end up in ship collisions. A simple human error will lead to millions of dollars of loss both from the cargoes point of view that the ship is carrying and also from the ship's point of view as well.

The International Maritime Organization (IMO) says that the shipping business is considered to be a truly global business because the cargoes that are carried from one country to another country spans the entire continent and is also considered to be the most dangerous when compared with any kind of businesses that are done in this world. Most of the time, the occupational stress of seafarer's plays an important role in the maritime accidents and the organizations such as

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IMO brings out a range of regulations and policies so as to increase the transportation safety by adopting innovative methods of navigation, using advanced technological methods of surveillance and so on. In spite of the measures taken by the policy makers, collisions do happen in the ports, in the shallow waters and also in the high seas. More stringent regulations will make the seafarers to take care of themselves and also the work life. This will enable the seafarers to be alert at all times of work and watch keeping will also improve.

The seafarers, unlike the employees working in other industries, faces a lot of work life dangers and the kind of endurance during the accomplishment of tasks by the seafarers will provide complete safety and security while working on board the ships. The endurance of the seafarers will be based on the way in which they encounter the risks such as physical extortion in delivering the work, turbulence of sea which is accompanied by the vigorous movement of ship, lack of proper sleep due to the continuous motion of ships, lack of proper duration of sleep, quality of food intake, loneliness and other related stressors. The seafarers should necessarily follow the guidelines of policy makers so as to mitigate the risk of exposing themselves to the perils of sea. The ways of combating the occupational stress depends on the work life discipline of seafarers while working on board the ships. The lack of discipline will the seafarers in deeper stress which will lead to complete extortion and subsequently their work life will come to a standstill.

In the organizations which are located on the shore, the employees will be asked to work for eight to ten hours a day. But in the maritime industry, there is no minimum or maximum suggested working hours since the seafarers who work on board the ships have to be alert at all time periods. They must be in a position to attend the calls made even during the rest time which is very much unique to the maritime industry. This kind of work life style of seafarers puts them in greater physical and mental stress. Many seafarers are accustomed to this kind of work life style but the newly joined cadets will find it very much difficult to adjust to the dynamic kind of work life style. For the newly joined cadets and also to the experienced seafarers, the training to mitigate the occupational stress must be given by every shipping company. The training will enable them to plan during the hours of urgency on board the ships and ultimately the occupational stress levels will be minimized. There are many factors which will contribute to the stress level of seafarers while working on the ship such as improper and inadequate training, long working hours, loneliness, lack of social life, lack of family life, lack of proper entertainment as compared to the shore entertainments, lack of proper communication among the peers, lack of job satisfaction, lack of discipline, health disorders, sea sickness, lack of job security, fear of piracy, lack of mental stability and the lack of physiological disorders. If the seafarers are affected by multiple stressors then their occupational stress levels will increase drastically.

The work related stress factors will also affect the productivity levels of seafarers. When the productivity levels of seafarers decrease then the peers and the superiors in the ship will find it extremely difficult to take the additional workload since it would be really difficult to look for alternative seafarers in the ship. When the seafarer is completely sick or mentally affected then the seafarer will be replaced only when the ship calls the next port and until then the workload of the affected seafarer must be borne by the existing seafarers. The occupational stress may lead to several consequences which will be detrimental to both physical and mental health of seafarers. The occupational stress which leads to occupational health hazards have been extensively studied with regard to organizations on the shore but when it comes to the ship the occupational stress researches had not been done much to identify a suitable solution.

II. LITERATURE REVIEW

Oldenburg M, Jensen HJ (2019) specified that the psychosocial and psychological stresses were incurred by the seafarers whenever the ship calls the port for loading and discharging of cargoes. The lack of sleep and the lack of proper exercise puts the seafarers in greater stress when the ship is on a long and tiring voyage from one port to another port. But when the ship is at the port, the seafarers gets a little bit of rest and sleep. When the loading or discharging of cargo takes a longer time then they may get additional time to have some sort of entertainment based on the conditions of the contract and also based on the assistance provided by the agent who serves the ship. When the seafarers are asked to take-up back to back voyages then the due rest and sleep for the seafarers will be forfeited and the seafarers will incur more stress while on the subsequent voyages. The continuous exposure to noise, ship's movement and other physical disturbances will put the seafarers in more stress. The inequality of treatment of seafarers on board the ships will also put the seafarers in greater stress, that is, the kind of treatment given to seafarers from the developed nation, the same kind of treatment that the seafarers used to get when they are from the developing nation will be much inferior.

Joanne McVeigh, et al, (2019) specified that the job satisfaction is dependent on the qualities of seafarers while working on board the ship and the ways to bring back the tough situation to the normal condition. In the process of bringing back the difficult situation to the normal situation, the seafarers are tend to take the additional efforts and there by the seafarers are in the danger of exposing themselves to greater stress levels. For the psychological wellbeing of seafarers, the environment in which they are working is considered to be really important. If the environment does not provide a suitable situation to work in a better way then they will be exposed to the circumstances of high occupational stress. When the seafarers get little time to relax and when they are confined to a space where they work and spend their valuable time for recreation then the amount of stress that they incur would be really predominant. The maritime industry has brought out rules and regulations for the seafarers to follow while on board the ships and when they face tough situation in the high seas jeopardizing their life then the situation will put them under high stress levels. Moreover the perceived injustice made to the individual seafarers will also act like adding fuel to fire and the occupational stress levels of seafarers will proliferate in the high manner.

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Jorgen Riis Jepsen, Zhiwei Zhao (2018) specified that the risk of working at sea is on the higher side when compared with the risk of working on the shore based jobs. The seafarers are exposed to more dangers of sea and hence special training must be given to the seafarers who work on board the ships. In order to mitigate the risk at sea, short term and long term training must be given to the seafarers before boarding the ship and so in case of emergencies, the seafarers will come to know about how to mitigate the risks and also how to reduce the stress levels in their everyday routine. When the ship navigates through the different time zones, the seafarers will be made to take additional precautions and this will put them in greater stress. The seafarers will be made to work in continuous shifts in order to meet the requirements of the ship and thereby they are disturbed with regard to the sleeping patterns. The stress mitigation management is very much essential when the ship navigates through the high seas and also at the circumstances when there is rough weather at sea. Moreover the severity of the stress levels must be assessed properly so as to take appropriate measures in order to reduce the stress levels. The study pertains to the interventions to be made with the seafarers and the ways of minimizing the stress levels of seafarers.

Jae-hee Kim and Soongnang Jang (2018) specified that the quality of work life on the ship depends on their exposure levels to stress and the stress related activities. The organizational culture that prevails on the ship will also contribute to the stress levels of seafarers on board the ships. The ship will have seafarers from different countries and the people with multiple cultural background when they sail on the ship, it will definitely end up in difference of opinion among the people. The perceived stress levels among seafarers depends on the ways in which they are exposed to work life on the ships. The seafarers are sailing with other seafarers who follow different cultural and social values and when they ae asked to work together by accepting the orders from superiors belonging to one particular country then the seafarers will face the high levels of stress. The study reveals that the seafarer's psychosocial and physiological adjustment depends on the attitude of the seafarers who work together.

Sigurd W. Hystad and Jarle Eid (2017) specified that the seafarers are exposed to long working hours when the ship sails from one port to another port which are located farther away. The stressors faced by the seafarers were carefully studied by the authors in order to identify what really makes them to incur themselves in the so called occupational stress. The study reveals that the lack of proper sleep time, the lack of exercise and the lack of disciplined work life makes them to incur themselves in greater stress. The stress levels used to be on the higher side depending on the number of days the ship sails on the sea. The environment that prevails in the sea will also make the seafarers to expose themselves to the high stress levels. Moreover when the seafarers are made to work for the long and continuous hours on board the ships then the situation will definitely make them to get into chronic stress. The chronic stress levels of seafarers will have a direct impact on their physical and mental life in the long run, jeopardizing them to lose their sea career. The health and safety of seafarers are given more importance by the shipping organizations since it would be really difficult for the shipping organizations to get a sort of quality work force when the current setup is disturbed. When the seafarers are taken care appropriately then the work life will have less impact on the occupational stress of seafarers.

III. RESEARCH METHODOLOGY

The research study uses the Indian seafarers who work on board the ships which are considered to be foreign going ships. The study attempts to reveal the proliferation of the occupational stress among the seafarers when they encounter with resilient situation which is uncommon as that of the regular work life situation. The seafarers who work on the engine side and deck side of the ship are considered as population of research study. The engine side seafarers and deck side seafarers who work at various levels of work order were considered. With regard to engine side seafarers, the chief engineer, 2nd engineer, 3rd engineer, engine side cadets and motormen / oilers were considered. With regard to the deck side seafarers, the captain (master), chief officer, 2nd officer, 3rd officer and deck cadets were considered for the study. A total of 150 samples were considered for the study. In order to elicit information from the respondents, a structured questionnaire was administered among the seafarers with demographic profile and the levels of agreement to the statements related to the occupational stress of seafarers. The stress factors or stressors were studied by using a five-point Likert scale from strongly disagree to strongly agree.

IV. RESEARCH OBJECTIVES

The research objectives of the study were to identify and analyze the stress factors which proliferate the levels of stress of seafarers while working on board the ships:

- To identify the mean differences of the occupational stress of Indian seafarers
- To study the relationship between the demographic factors and the stressors of seafarers

V. HYPOTHESIS OF THE STUDY

The article proposes the following hypotheses so as to effectively establish the research objectives:

- There is a significant difference in the mean values of the occupational stress factors.
- There is a significant association between the factors of stress which proliferate the levels of stress among seafarers

VI. RESULTS AND DISCUSSION

Demographic Data Analysis

The research study attempts to identify the occupational stress of seafarers who work on board the ships for a single voyage or for a continuous voyage. Based on the information in Table-1 regarding the demographic factors related to the study, it can be inferred that the age of the respondents falls under the age category of 25-35 years with the percentage of 36% followed by the respondents with age range of 35-45 with the related percentage of 31%. With regard to the education of respondents, 32% of respondents have done certificate or diploma course which is followed by 29% of respondents with graduation certificate. 36% of respondents

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have an experience of 3-8 years in the sea career which is followed by 27% of respondents with the sea experience of 8-13 years. 19% of the respondents were 2nd engineers who work on board the ships which is followed by almost equal percentage of master of the ship and chief engineers. 57% of the respondents received training in the appropriate manner in order to mitigate the stress levels when they face difficult situation on board the ships.

Table-1: Demographic Factors (n=150)

Demographic Factors	Frequency	Percentage
Age		
Below 25	26	17
25-35	54	36
35-45	47	31
45-55	12	8
Above 55	11	7
Education		
SSLC / HSC	35	23
Certificate / Diploma	48	32
Graduate	44	29
Post-graduate	11	7
Others	12	8
Sailing experience		
Below 3 yrs	22	15
3-8 yrs	54	36
8-13 yrs	40	27
13-18 yrs	23	15
Above 18 yrs	11	7
Level of Seafarers		
Master (Captain)	24	16
Chief Officer / Mate	19	13
2nd officer	9	6
3rd officer	14	9
Chief engineer	22	15
2nd engineer	28	19
3rd engineer	14	9
Oiler / Motormen	11	7
Cadets	9	6
Seafarers Training for Stress Management		
Yes	86	57
No	64	43

The questionnaire was administered to the seafarers who work on board the ships in order to measure the level of stress incurred by them while accomplishing the tasks. In order to test the first hypothesis that there is a significant difference in the mean values of the factors of stress, t-test has been used. The independent t-test formula is given below:

$$t = \frac{X - \bar{X}}{\frac{s}{\sqrt{n}}}$$

Where X is the stress variable under study, X-bar is the mean of X variable, S is the sample standard deviation and n is the sample size under investigation. The results clearly shows that the p-values of all the occupational stress factors are less than 0.05 (Table-2). This result clearly shows that the seafarers are incurred to the varied levels of stress such as Unable to keep oneself awake, Coordination between eye and hand, Difficulty in speaking, Layoff feeling, Unable to exert force, Tools/equipment getting slipped, Uncomfortable, Physical positions, Headaches, Dizziness, Excessive heart beating, Fast breathing, Poor appetite, Lack of sleep, Sudden fretting, Leg pains, Indigestion, Intolerance, Carelessness, Lack of motivation at work, Sudden change in mood, Unable to judge situations, Incorrect interpretation of information, Lack of ability to predict danger, Sluggish response, Lack of attention, Difficulty in concentration, Disturbed sleep, Lack of quality of sleep, Short rest time, Levels of stress, Routine and dull work, Excessive Noise or Vibration, Movement of Ship, Food, Lack of Medical conditions, Environment, Sea sickness, Long working hours, Lack of concentration, Lack of decision making, Lack of memory, Lack of quick response, Lack of physical control, Lack of cheerfulness, Lack of attitude.

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Table-2: Student's t-test of Occupational Stress factors (significance level = 0.05)

Occupational Stress factors	t	p
Extent of Stress		
1. Unable to keep oneself awake	2.11	0.008*
2. Coordination between eye and hand	1.41	0.014*
3. Difficulty in speaking	2.22	0.024*
4. Layoff feeling	2.42	0.017*
5. Unable to exert force	2.37	0.008*
6. Tools/equipment getting slipped	1.14	0.017*
7. Uncomfortable Physical positions	1.36	0.007*
8. Headaches	1.18	0.004*
9. Dizziness	1.42	0.004*
10. Excessive heart beating	1.24	0.017*
11. Fast breathing	1.44	0.018*
12. Poor appetite	1.14	0.007*
13. Lack of sleep	1.18	0.019*
14. Sudden fretting	1.13	0.013*
15. Leg pains	1.34	0.004*
16. Indigestion	1.62	0.012*
17. Intolerance	2.28	0.002*
18. Carelessness	2.18	0.013*
19. Lack of motivation at work	2.27	0.014*
20. Sudden change in mood	2.38	0.021*
21. Unable to judge situations	2.76	0.002*
22. Incorrect interpretation of information	2.38	0.018*
23. Lack of ability to predict danger	2.48	0.001*
24. Sluggish response	2.35	0.002*
25. Lack of attention	2.58	0.005*
26. Difficulty in concentration	2.13	0.017*
Causes of Stress	**T**	**p**
1.Disturbed sleep	2.12	0.017*
2.Lack of quality of sleep	1.04	0.005*
3.Short rest time	1.85	0.017*
4.Levels of stress	1.95	0.012*
5.Routine and dull work	1.73	0.009*
6.Excessive Noise or Vibration	2.24	0.012*
7.Movement of Ship	2.18	0.014*
8.Food	1.73	0.007*
9.Lack of Medical conditions	2.84	0.017*
10. Environment	1.24	0.016*
11. Sea sickness	2.87	0.019*
12. Long working hours	1.94	0.007*
Effects of Stress	**T**	**P**
1. Lack of concentration	2.38	0.013*
2. Lack of decision making	1.35	0.018*
3. Lack of memory	2.99	0.012*
4. Lack of quick response	2.34	0.011*
5. Lack of physical control	1.55	0.016*
6. Lack of cheerfulness	1.45	0.004*
7. Lack of attitude	2.67	0.016*

* $p < 0.05$.

In order to test the second hypothesis, the correlation (r) between age of seafarers and the extent of stress, age of seafarers and the causes of stress & age of seafarers and the effects of stress are calculated and the correlation values are 0.911, 0.845 & 0.815 respectively (Table-3). The correlation value has been calculated by using the following formula:

$$r = \frac{n(\Sigma xy) - (\Sigma x)(\Sigma y)}{\sqrt{\left[n\Sigma x^2 - (\Sigma x)^2\right]\left[n\Sigma y^2 - (\Sigma y)^2\right]}}$$

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Table-3: Correlation Table

Correlation	Extent of Stress	Sig. (2-tailed)*	Causes of Stress	Sig. (2-tailed)*	Effects of Stress	Sig. (2-tailed)*
Age	0.911	0.002	0.845	0.014	0.815	0.011
Sailing Experience	0.821	0.013	0.838	0.011	0.883	0.017

* $p < 0.05$.

VII. CONCLUSION

The study attempts to identify the occupational stress of seafarers while working on board the ships and the ways to mitigate them. The major stressors of the seafarers are the long sailing hours between one port to another port, the lack of sleep, lack of proper exercise, separation from the family, the lack of social life, the noise, vibration and heat produced by the movement of ships. More than that the ship may face difficult situation while getting navigated from one place to another place. At this juncture, when the ship faces the technical issues or the issues related to navigating the ship then the seafarers will incur heavy stress. Moreover the seafarers tend to do the same kind of job every day in the routine manner and this makes them to feel the real stress of sailing on board the ships. The lack of communication from the superiors, and the treatment given to the subordinates by the superiors will also put the seafarers under great occupational stress. The seafaring job is not a job which could be compared with shore based jobs. Since the seafarers must be ready 24 hours a day and this reason really puts the seafarers in excessive stress. Both the engine side seafarers and deck side seafarers face an equal amount of stress while accomplishing their tasks.

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AUTHORS PROFILE

Prof. Dr. J. Rengamani has got more than 24 years of teaching and research experience in the field of management studies. The author has published more than 75 research articles in Scopus indexed journals, UGC approved journals and other high impact factor journals. He has authored 5 books and guiding 7 PhD scholars. He has presented articles in many conferences and seminars. He has received 4 awards. He was nominated as the member of Board of Management of AMET University. Presently, he is working as the Professor of AMET Business School, Chennai.

Prof. Dr.A.Shameem has more than 35 years of experience and have served in various capacities including Head of the Department, Dean and Placement Coordinator. Dr.A.Shameem has done B.Com, MBA, PG Diploma in Management Research, Ph.D. She is a Certified Resource Person by SEBI and have conducted many Programs on behalf of SEBI on Financial Planning for different stakeholder groups which have been highly appreciated. She has worked with leading B Schools in India. Currently employed as Professor in AMET Business School, Chennai.