

# Contributory to Stress and Fatigue of Filipino Seafarers

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apjme@lpubatangas.edu.ph

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**Angelo U. Panganiban (MAMET), Olympio B. Garcia (Ed.D)**

Master in Maritime Education and Training, Graduate School,  
Lyceum of the Philippines University, Batangas City, Philippines  
cmpanganiban05@gmail.com

**Abstract** - *Being a seafarer requires a strong mental stability and an established tough physical foundation, along with an adaptive and flexible attitude. However, stress and fatigue hinder the maritime professional to perform effectively. With this, the study sought to find out the contributory factors to stress and fatigue of Filipino seafarers. The researcher used the descriptive design to describe the contributory factors to stress and fatigue of Filipino seafarers. The respondents consisted of 205 seafarers who are into offshore, coastal and blue water types of vessels. It was found out that Filipino seafarers find factors contributory to stress and fatigue to be moderately stressful to which the physical factors prevail over emotional, environmental and psychological. On the other hand, there is a significant difference of responses on the environmental, emotional, physical and psychological factors contributory to stress and fatigue of Filipino seafarers when grouped according to profile. Lastly, a plan of action was proposed to lessen and address the factors contributory to stress and fatigue of Filipino seafarers.*

**Keywords:** *Occupational Stress, Fatigue, Filipino Seafarers*

## INTRODUCTION

Seafaring is undeniably a tough profession. A seafarer, being away from family has to endure limited social life, monotonous routines, and different working environment which lead to different kinds of stress (Raunek, 2016).

Seafarers, also referred to as seamen, are mostly male workers who work from six to ten months onboard commercial or non-commercial vessels. The Philippines remains to be the top source country for seafarers supplying more than 20 percent of the world's maritime workforce. Seafarers constitute more than a quarter of the 1.5 million overseas workers who work for a minimum of six months aboard shipping vessels that travel in the high seas (Gregorio, 2012).

A wider variety of experiences are presented to the life of a seafarer. All the features of the seafarer's life include travelling abroad, adventure and seeing different ports (Akindehin et al., 2015; Maku, et al., 2015). But a seafarer would have to be strong to work solid hours, for their family to have better living, and as a result, seafarers would have only a little time to take enjoyment in the profession.

Barranta (2012) states that Filipino seafarers have generally high and positive attitude towards work environment. Their emotional attitude is generally highly positive compared to other nationalities because they have the feeling of self-confidence,

calmness and clear thinking moments. However, every day, seafarers have to deal with a unique physical work setting. They work aboard a ship amidst a deep surface of the ocean that is so very far away from the land. The ship stays at sea for many days and all the seafarer could see is the deep body of water and the sky above.

Apart from this setting, an average seafarer works approximately 12 hours a day, under different weather conditions while the ship is traversing a deep sea. Aboard the ship, a seafarer may be exposed to both man-made and natural risks such as; severe weather conditions, accidents and serious untoward incidents. On top of these, the most important risk that a seafarer has to confront to can be either the emotional or psychological stress that might lead him to a state of desperation. Aboard the ship, he is detached from the pleasures and comforts of own land, home and family. He can suffer from the state of homesickness and in extreme cases, the state of desperation, which may disrupt his ability to perform the assigned job duties and responsibilities. This situation may lead to early repatriation resulting in the loss of his earnings as well as inconvenience to the management level officers of the ship and ultimately the employer.

The shipping business cannot be completely controlled by regulatory and governing bodies. Seafarers' health and safety is found to be fragmentary due to the influence of globalization

causing possible serious deleterious effects for seafarers. Closer monitoring of seafarers' health and safety and an international regulatory regime are essential to taper the very widespread gap between best and worst industry practice. The maritime sector has always been an area where threats related to the health, injury and death of workers were important. However, since the mid-1970s, activity has been completely changed by the shifts on flags of convenience, outsourcing operations by the owners of international companies of shipping and ship management companies, growth of mixed nationality crew and technological and economic changes that condensed manning and extended working hours. (Bloor, Thomas & Lane, 2010).

The matter of fatigue at sea is one that will not just vanish. The industry has had more luck fighting pirates than solving problems of sleep deprivation, stress and burnout. Fatigue is not some vague concept; it is a recognized and serious medical concern. It can be called different names, tiredness, exhaustion, lethargy, and listlessness. In essence though it is all about the physical and/or mental state of being tired and weak ("How to Tackle Fatigue", 2016).

A seafarer requires strong intellectual stability and a tough physical well-being, with a flexible and adaptable attitude. However, stress and fatigue hinder the maritime professional to perform effectively. The researcher, being a young marine officer, believes that Filipino seafarers are still the strongest force in the world's maritime trade and considers them to be the most potential contributor of quality service to the industry. Thus, he hopes that his study will pave way to the creation of an established stress management program for seafarers in order to keep them stay and be an efficient part of the business.

#### **OBJECTIVES OF THE STUDY**

The study aimed to determine the factors that contribute to stress and fatigue of Filipino seafarers. Specifically, it sought to (1) determine the profile of respondents in terms of sea area predominantly work, current occupational category, number of years in the industry and onboard, types of ship/vessel they have worked on, number of years in the current type of ship, age, marital status and monthly income; (2) determine the factors that contribute to stress and fatigue of Filipino seafarers in terms of psychological, physical, emotional and environmental; (3) test the difference of responses when grouped according to profile, and (4) propose a program to lessen the stress and fatigue experienced by Filipino seafarers.

#### **METHODS**

##### **Research Design**

A descriptive research design was used for this research. Descriptive research was used to describe characteristics of a population or phenomenon being studied. The quantitative approach was utilized to approximate phenomena from a larger number of individuals using survey methods.

##### **Participants of the Study**

The respondents consisted of 205 seafarers out of 92,800 total populations who are into offshore, coastal and blue water types of vessels. The number of respondents was based on an effect size of 0.32 using G\*Power 3.1.9.

##### **Data Gathering Instrument**

Contributory to Stress and Fatigue of Filipino Seafarers was assessed using a questionnaire adopted and modified from the study, "A Survey of the Health, Stress and Fatigue of Australian Seafarers". The questionnaire was validated by experts in the field. It underwent validation and reliability testing with a Cronbach alpha result of 0.779, 0.907, 0.938 and 0.710, which was psychological, physical, emotional and environmental respectively. The survey was created using suitable questions modified from related research and individual questions formed by the researcher. The survey was comprised of 47 questions, which were related to the participant's level of stress based on different indicators. In the questionnaire, Likert scale was used to determine the frequency of the level of stress and coping mechanisms the participants usually encounter.

##### **Gathering Procedure**

The data for this research were collected using a survey questionnaire. After the professor validated the questionnaire, these were distributed to the manning agencies and training centers which had agreed to take part in conducting the survey to their seafarers. The researcher assured the respondents of the confidentiality of their responses. The researcher also understood that people's consciousness may also affect their honesty and effectiveness in answering the survey, and so, the researcher gave respondents the option of being anonymous. Retrieval rating of 100% was achieved out of the target respondents of 205.

##### **Data Analysis**

Analysis of responses utilized the statistical approach for the level of stress Filipino seafarers

where frequencies, cross-tabulations and tests for significance were calculated. The data were treated using statistical software, PASW Version 18 in order to analyze deeply the results of the study. Frequency Distribution, ranking, weighted mean and Analysis of Variance (ANOVA) were the statistical tools used to compute the data gathered from the survey.

The given scale was used to interpret the level of stress and fatigue of Filipino seafarers: 3.50 – 4.00 = Very Highly Stressful (VHS); 2.50 – 3.49 = Highly Stressful (HS); 1.50 – 2.49 = Moderately Stressful (MS); 1.00 – 1.49 = Not Stressful (NS).

## RESULT AND DISCUSSION

Table 1 presents the percentage distribution of the respondents' profile. As revealed in the table, majority of the respondents are working in a blue water with a frequency of 99 and a percentage of 48.20 while only a few or a frequency of 45 (22%) are working as off-shore. This shows that most of the seafarers still preferred or opted to be in the blue water line of work since it is the most open position to them and easy to board with. Also, shipping companies have more vacancies on blue water job while only a few are given privilege to be in an off-shore job. Blue water seamen are designed to operate on and range over the open sea. They are considered oceangoing and can be dispatched throughout the world, far from its home base. Blue water is considered to be challenging yet exciting for most of the seafarers for they are able to see the world for free. On the other hand, majority of the off-shore workers are employed for short periods and will require entry for less than six months to go offshore before returning home for leave.

When it comes to age, most of the respondents are 31-40 years old with a frequency of 83 or 40.50% while only 44 or 21.50% is at the age of 18-30. The prevailing age of the respondents also correlate to the marital status to which majority of them belong. One hundred thirty-four (134) or 65.40 percent are married while there are 17 or 8.30 percent who declared they are widowed/separated or divorced. People get married at various ages, but there are definite trends that vary across demographic groups. As for the seafarers who are mostly blue water, they prefer going into steady life or be married at the age they find to be professionally and financially stable to provide the needs of their family. Also, with the trainings and other financial considerations of the seafarers, they tend to set aside marriage in their first years of vessel work and focus more on their career and save for the future.

**Table 1. Percentage Distribution of the Respondents' Profile**

Profile Variables	f	%
<b>Area of Work</b>		
Blue Water	99	48.20
Coastal	61	29.80
Off-shore	45	22.00
<b>Current Occupational Category</b>		
Master	15	7.30
Mate	49	23.90
Chief Engineer	16	7.80
Engineer	31	15.10
Catering Attendant	12	5.90
Cook	17	8.30
Deck Ratings	24	11.70
ER Ratings	16	7.80
Cadet	25	12.20
<b>Length of Work in Maritime Industry</b>		
1 – 5 years	45	22.00
6 – 10 years	35	17.00
11 – 15 years	39	19.00
16 years and above	86	42.00
<b>Length of Work in the Current Position</b>		
1 – 5 years	110	53.70
6 – 10 years	36	17.50
11 – 15 years	15	7.30
16 years and above	44	21.5
<b>Type of Ship</b>		
Dry Cargo Vessels	98	47.80
Tanker Vessels	98	47.80
Off-shore Vessels	9	4.40
<b>Length of Years Working in this Ship</b>		
1 – 5 years	91	44.40
6 – 10 years	51	24.90
11 – 15 years	14	6.80
16 years and above	49	23.90
<b>Age</b>		
18 – 30 years old	44	21.50
31 – 40 years old	83	40.50
41 years old and above	78	38.00
<b>Current Marital Status</b>		
Single	54	26.30
Married	134	65.40
Widowed / Separated / Divorced	17	8.30
<b>Total Gross Income</b>		
Below \$10,000	199	97.10
\$10,001 - \$50,000	6	2.90

On the other hand, one of the most challenging aspects of life at sea is to somehow keep relationships and friendships alive despite being away so often. In this case, some seafarers failed or their partners failed to make their relationships work and resort to separation.

When it comes to the current occupational category, Mate with a frequency of 49 or 23.90 percent comes first in rank while engineer and cadet follow with a frequency of 31 (15.10%) and 25 (12.20) respectively. This shows that the respondents having been in the age of 31-40 have established themselves as officers and has passed government examinations for maritime professionals. Consequently, catering attendant comprises the least number of respondents with a frequency of 12 or 5.90 percent while Chief engineer, ER ratings and Cook follow with a frequency of 16 (7.80%) and 17 (8.30) respectively. It is noted that vessels, particularly those that are not into passenger and cruise line, hire only a few catering or steward attendants onboard.

Mate is comprised of the third mate, second mate and the chief mate or the chief officer. The First Mate or Chief Mate is the head of the Deck Department and is in charge of the vessel's cargo operations, and the safety and security of the ship and crew. The third in command in the ship is the Second Mate who serves as the navigation officer onboard. What completes this department's officers is the Third Mate whose primary task is to look after the safety of the ship and crew.

The chief officer is the head of the deck department and is responsible for the ship's loading operations and the safety of the ship and the crew. The second officer is assigned to navigational equipment and charts and is the third in command of the vessel. However, the third officer is the one in charge for the maintenance of safety equipment. This set of officers ensures smooth vessel's operation and proper management strategies (The seafaring profession: The ranks in the ship, 2012). Additionally, Raunek (2016) of *marineinsight.com* said that one of the most important ranks among the bridge officers is the Chief Officer. He is one of the four management level officers who reports directly on the master and is the second in command after the captain of the ship.

In terms of length of work in Maritime industry, 86 or 42 percent of the respondents have said that they have been working for 16 years and above while only 35 or 17 percent have been enjoying the profession for 6-10 years. This shows that seafarers tend to work long-term in the profession basically because they have to provide the needs of their family. Seafaring profession for them is money-earning and as long as they can work or their physical body allows they will continue on working. Aside from that, they have found enjoyment in the profession because they can travel the world for free. Shipping is known as the oldest industry to run the economy and is still the

most reliable means of trade worldwide (Why Choose a Seafaring Career, 2016). Indeed, maritime is the best industry for one's long-range career goals. Also, seafarers are provided with greater benefits and salary packages compared to what land-based workers usually get. Additionally, in the shipping industry, each seafarer is given the chance to stay with the same employer and manning agency after finishing a contract. He may also improve his skills and advance his career through the numerous accredited maritime training and review centers found across the country. These are basically some of the reasons why seafarers remain in the maritime profession for a longer time.

Likewise, when it comes to the length of work in the current position, majority of the respondents seem to keep on changing company and looking for a better opportunity as reflected by a frequency of 110 or 53.70 percent for 1-5 years stay while only 15 or 7.30 percent remained loyal to their company for 11-15 years. This only reflects that as maritime professionals aged and as they acquire more skills and training, they go for better opportunities which they think would be given by other shipping company. Likewise, they think that this company can hone them professionally and give them better possibilities. Seafarers, although embedded with a contract, refuse to be retained to a particular company if they find better offer from the others. Arsenie, Hanzu-Pazara, Surugiu (2014) said that an important aspect of retention is represented by the generation of a career path for seafarers, a fact which allowed a more easily controlled evolution of seafarer careers. A career path is an important element within bigger shipping companies, where advancing in rank is possible after examination of a seafarer's career evolution and verification of his fidelity and respect for the company. In addition, when deciding to stay aboard ships of the same company, seafarers takes into account many other aspects such as company policy on staff training, support for training improvement, family support and employment programs to accept seafarer's relatives who intend to follow their career.

Furthermore, most of the respondents have been boarding dry cargo vessels and tanker vessels. Both of these got a frequency of 98 and a percentage of 47.80 while only 9 (4.40%) is into off-shore vessels. Mohit (2016) of *marinesight.com* wrote that seafarers are most of the time uncertain with the type of vessel they will work on (dry or tanker vessels). Seafarers prefer a dry cargo vessel because it is a well-known fact that dry vessels give more port visits. For those who like to go in ports as different countries ships' visits, dry ship

is the best choice for them. Feeder container vessels enter ports every 2-3 days with the port stay for at least one day. It is the same case of the bulk carriers that have a long stay in port. Some bulk carriers remain in port for as long as a month. However, many people opt for oil tankers because there are many better compensation compared to those offered in dry vessels. A senior officer on a tanker earns approximately 1.5 times more than a dry ship officer. For many seafarers, to embark on a tanker ultimately is all about money.

Lastly, when it comes to total gross income, majority or 199 (97.10%) of the respondents are earning below \$10,000 while only 6 or 2.90% receives a salary of \$10,000-\$50,000. According to Charpentier (2017) a seafarer's pay is often based on a daily rate or a daily rate plus overtime. An offshore seafarer is more likely to earn the "day rate" without overtime. Moreover, Ramirez as cited by GMANewsonline (2009) cited that an OS or ordinary seaman receives a monthly salary of \$ 500 to \$ 800, while a ship's captain receives a salary of \$ 8,000 to \$ 12,000 per month. On the other hand, Gamboa (2013) stated that the Philippine compensation system for seafarers remain attractive. Rates are net for seafarers as they barely have expenses onboard. They do not pay for food, rent, transportation, uniforms and other expenses. Most of the ship owners try to compensate their crew with good recreation and food to make up for the lonely life at sea.

Table 2 depicts the psychological factor contributory to stress and fatigue. The over-all assessment was moderately stressful with a composite mean of 2.14. All items were rated moderately stressful and concern for loved ones ashore got the highest weighted mean score of 2.18. This implies how seafarers think and consider the welfare of the loved ones they leave on land. Filipino seafarers, in particular, has valued their family the most that even it is difficult to be away from them still they prefer to go onboard and work far from their family to address their needs. One of the biggest sacrifice a seafarer put through is being away from their loved ones when they are sailing and doing their work at sea. Seafarers have to miss birthdays, family assemblies or events and weddings because they have to accomplish their responsibilities at ship. Seafarers have to perform their job to guarantee that celebrations from around the world would not discontinue, even if it means surrendering their own pleasure (Why Choose a Seafaring Career, 2016).

**Table 2. Psychological Factor Contributory to Stress and Fatigue of Filipino Seafarers**

Indicators	WM	VI	Rank
1. My family's attitude towards my job and career	2.11	MS	8.5
2. Demands on my work gives difficulty on my relationship with my family	2.11	MS	8.5
3. Threat of impending redundancy or early retirement	2.13	MS	6
4. Being away from home for extended periods	2.15	MS	3.5
5. Home life with a partner who is also pursuing a career	2.13	MS	6
6. Absence of stability or dependability in home life	2.17	MS	2
7. Pursuing a career at the expense of home life	2.10	MS	10
8. Concern for loved ones ashore	2.18	MS	1
9. Absence of emotional and practical support from family	2.13	MS	6
10. Insufficient time with family/spouse/children	2.15	MS	3.5
<b>Composite Mean</b>	<b>2.14</b>	<b>MS</b>	

In addition, it was found that leaving partners and their families is one of the most significant causes of stress for seafarers. Separation of family is one of the main stressors that encourage seafarers to request for reduction of signed employment contract or early disembarkation. (Manalo, Mercado, Paragas, Tenorio & Thomas, 2010; Dotimas, 2015).

It was followed by absence of stability or dependability in home life, being away from home for extended periods and insufficient time with family/spouse/children. Since family matters the most to the seafarers everything about it, even small issue, affects them and their work onboard. While navigating their mind is occupied with thoughts about family and the time they have supposed to spend with them. Also, seafarers get disappointed and frustrated every time they exceed on the contract set and is unable to go home on the specified date. Aboard the ship, he is disconnected from the pleasures and luxuries of own land, home and family. He can grieve from the state of homesickness and in extreme cases, the state of desperation, which may disrupt his skill to perform the given job responsibilities and obligations.

However, items such as My family's attitude towards my job and career, demands on my work gives difficulty on my relationship with my family and pursuing a career at the expense of home life obtained the lowest mean score of 2.11 and 2.10 respectively. This means that although it is crucial for

any seafarer to be away from home and their family, still they find fulfillment in their professional and personal life. Seeing their loved ones and their lives improved brings pleasure to a seafarer. Furthermore, the emotional support given by the seafarers' family is of great importance as it highly boosts their morale and push them to work harder.

**Table 3. Physical Factor Contributory to Stress and Fatigue of Filipino Seafarers**

Indicators	WM	VI	Rank
1. Having far too much work to do	2.27	MS	5
2. Taking my work home between trips	2.15	MS	9
3. Keeping up with new techniques, ideas, technology or innovations	2.08	MS	12
4. Too much or too little variety in work	2.15	MS	10
5. Characteristics of the ship's management structure and design	2.20	MS	6
6. Work travel and having to live in hotels	2.10	MS	11
7. Inadequate rest breaks between trips	2.18	MS	8
8. Long working hours	2.20	MS	7
9. Unwanted sexual advances	2.32	MS	3
10. Being woken unexpectedly from your sleep to deal with a problem	2.41	MS	2
11. Unpredictable working hours	2.73	HS	1
12. Routine administrative tasks or 'paperwork'	2.31	MS	4
<b>Composite Mean</b>	<b>2.26</b>	<b>MS</b>	

Table 3 shows the physical factor contributory to stress and fatigue to the respondents. It was observed that only unpredictable working hours obtained the highest weighted mean of 2.73 and the only item that was considered highly stressful. This suggests the difficulty met by the seafarers, specifically those who are new in the profession, of the uncertainty of the schedule which deviates from their normal body routine. Seafarers are also troubled with the changes in the working hours as it also affects his scheduled communication with family. Jayakody (2008) identified unpredictable working hours particularly when arriving in port as one of the disturbances while resting. This goes along with being woken up unexpectedly (that affects their sleep or rest), on call (during port operations) which basically causes fatigue. Zhu (2014) said that the most important factor

that causes lack of nutrients in the body of seafarers is sleep deprivation. It also results in a negative balance of energy metabolism. On the other hand, Raunek (2016) attested that the leading cause of stress onboard ships is tentative working hours which results to disparity in human biological clock.

On the other hand, Carotenuto, Molino, Fasanaro, and Amenta (2012) agreed that seafaring work will always contain an element of fatigue, varying according to workload. Decision making and vessel's safety may be compromised with poor quality sleep and long work hours. These stressors are major sources of stress and chronic fatigue. Fatigue was more pronounced when asked to work extra hour, being more distinct in the order in, mates/masters, engineers and deck crews. Working for extended hours had an impact on all occupational categories and if not addressed properly, may cause damages or lead to fatality.

Other items were assessed moderately stressful and being woken unexpectedly from your sleep to deal with a problem, unwanted sexual advances and routine administrative tasks or 'paperwork' topped also on the list. This proves that far from many people's concept of seafaring as a lucrative job, seafarers face a variety of challenging works onboard that lead them to be physically stressful. The demanding load of works and disturbances as well as unwelcome gestures made towards another person on board affect the seafarer's dealings with others and his work. Murugan and Rengamani (2012) in their noted that the higher levels of stress such as workload and uncertainty as to supervisors' expectations were associated with physical symptoms such as poor attitudes towards employment and headaches.

Slišković and Penezić (2015) added that stress factors in seafaring work contain typical sources of stress at work that are recognized in many models of work stress, such as: job demands (heavy workload and long hours of work); the upkeep received management and colleagues; the control seafarers have over their job; work interactions; the role of the crew in the organization; change in management; and job security.

Though all items were considered stressful, too much or too little variety in work (2.15), work travel and having to live in hotels (2.10) and keeping up with new techniques, ideas, technology or innovations (2.08) ranked the least. This implies the ability of the maritime professionals to adjust and manage the working environment that they have. Since it is a seafarer's dream to go on board and practice his

profession, he will do anything to go with it and be successful. Moreover, he will not continue on taking trainings and upgrade himself to handle the changes that the industry has. And even new technology on board arises; a seafarer knows how to innovate himself and cope up with the changes. Although life on board is physically exhausting at time, still seafarers are gratified being in that profession. Magpantay in an article written by Novio (2015) mentioned that traveling around the world, having a tax-free competitive salary with free accommodations and food, and learning different languages are the perks of being a seafarer when they are on shore.

**Table 4. Emotional Factor Contributory to Stress and Fatigue of Filipino Seafarers**

Indicators	WM	VI	Rank
1. Over promotion. Being promoted beyond my level of ability	2.11	MS	11
2. Under promotion. Working at a level below my level of ability	2.08	MS	13.5
3. Personal beliefs conflicting with those of the management	2.05	MS	15
4. Inadequate guidance and back up from superiors	2.12	MS	9.5
5. Lack of social support by people at work	2.12	MS	9.5
6. Culture based discrimination and favoritism	2.33	MS	3
7. Feeling isolated	2.08	MS	13.5
8. A lack of encouragement from superiors	2.13	MS	7.5
9. Being undervalued	2.13	MS	7.5
10. Inadequate feedback about my own performance	2.09	MS	12
11. Ship morale	2.17	MS	6
12. 'Personality' dashes with others	2.20	MS	4
13. Tension between crew and officers	2.43	MS	1.5
14. Difficulties getting along with your immediate superiors	2.18	MS	5
15. Dealing with ambiguous or delicate situations	2.43	MS	1.5
<b>Composite Mean</b>	<b>2.18</b>	<b>MS</b>	

Table 4 reveals the emotional factor contributory to stress and fatigue. The respondents' assessed this factor as moderately stressful. Tension between crew and officers and dealing with ambiguous or delicate situations rank first with a weighted mean score of 2.43. Emotional factors have to do with a seafarer's relationship with the other crew members. In a vessel situation involving a difficult situation, tendency of

miscommunication happens between the officers and his crew that may lead to argument and misunderstanding. And since vessel is manned by only a few number of crew members, their everyday life is subject to tension that leads to stress.

The good operation of the ship requires a seamless coordination of all crew members. Everyone should know all members of the team and cooperate to solve personal problems. And that is a responsibility of every member of the team, because proper maintenance of personal relationships is as important as the maintenance of the ship. The company and team spirit should be a priority for everyone on board. ("Life Onboard Merchant Vessel", 2017).

It was followed by culture based discrimination and favoritism (2.33), personality' dashes with others (2.20) and difficulties getting along with your immediate superiors (2.18). A vessel involves crew members who come from different family background and orientation that is why complexity in communication and difficulty in adopting one's culture arise. In the case of mixed-crewing, different nationalities are placed together in one place for six to 12 months and adjusting to each other may take long. This is where favoritism comes in the picture as an officer may prefer one against the other whom he finds easy to deal with and embodies the same nature as he is. Also, newly-hired or neophyte on board, are still in the process of adjustment in their first few months and may set themselves apart from the other crew. Wei, L. and Crystal (2009) cited that when a seafarer is unable to get along with the other crew, interpersonal relationships might be a constant cause of stress. There have been cases where seafarers left the profession for good because of inability to continue working under pressure imposed by non-cooperative crew members. Since the shipping system is closely linked, especially within the same company, negative interpersonal relationships from one vessel or team may lead to negative reception by another team in another ship which the seafarer has to join.

Though all were rated moderately stressful, item such as working at a level below my level of ability, feeling isolated and personal beliefs conflicting with those of the management rated the least and obtained the lowest mean score of 2.08 and 2.05 respectively. It is given that once a seafarer steps in the vessel he is expected to have acquired the necessary training and skills required in order to be a qualified member of the crew. Equipped with formal education and skills, he is also confident that he can perform all the tasks to the

best of his ability so his qualifications and the ability to do seafarer's work will not be questioned.

Also the moment a seafarer enters the maritime profession he has started to love and embrace the life and culture on board vessel so his relationship with the other crew members must be established to achieve a harmonious sea voyage.

According to Amante (2014), Filipino seafarers were restricted to their ships and have little choice about the individuals they live with. Management level officers, junior officers and the ratings tend to occupy different spaces, with different, recreation, dining and living areas. Sampson (2003) observed that with different nationalities on board, boundaries in different aspects between officers and ratings are very evident and usually results in an unsmooth relationship of everyone onboard.

**Table 5. Environmental Factor Contributory to Stress and Fatigue of Filipino Seafarers**

Indicators	WM	VI	Rank
1. Excessive noise	2.12	MS	5
2. Excessive gales (wind)	2.34	MS	1
3. A hot working environment	2.08	MS	9
4. Cold working environment	2.07	MS	10
5. Factors not under my direct control	2.10	MS	7
6. Inadequate lighting	2.20	MS	2
7. Level of humidity	2.10	MS	7
8. Excessive vibration	2.13	MS	4
9. Poorly maintained equipment	2.15	MS	3
10. Unhygienic conditions at sea	2.10	MS	7
<b>Composite Mean</b>	<b>2.14</b>	<b>MS</b>	

Table 5 presents the environmental factors contributory to stress and fatigue. All items under this factor were rated moderately stressful. The top three items were excessive gales (wind), inadequate lighting and poorly maintained equipment which obtained a weighted mean values of 2.34, 2.20 and 2.15 respectively. Environmental factors also affect the seafarers and somehow bring them stress. This is due to the fact that every seafarer wants to enjoy their work and value their seafaring experience that they do not want it to be spoiled by those unwanted factors around. However, there are things that are beyond their control and thus caused them to be burned-out and frustrated which also affect their work performance and even their relaxation time. Zhu (2014) said that when a seafarer becomes aware of his inability or difficulty in coping with the environment

that poses a threat or demand, environmental stress occurs.

Seafarer's stress happens not only during working hours, but also in leisure time that seafarers are continually exposed to ship-related environmental stressors, such as ship movement, noise and vibration. Especially during sleeping times, these factors can have a marked impact on the recreational value of leisure (Oldenburg, Baur & Schlaich, 2010).

However, the least rated items were factors not under my direct control, level of humidity, unhygienic conditions at sea, a hot working environment and cold working environment. This only suggests that these environmental factors do not matter much or have no effect on the seafarer's work on board vessel. Since maritime professionals are prepared for diverse circumstances on board vessel they can easily adapt themselves to the changing conditions of the environment. Filipino seafarers specifically are known to have the endurance that enables them to resist and stand to whatever climate and sea trials.

Filipino seafarers possess good problem-solving and decision-making skills that are both highly relevant to easily survive in the varying climates, environment, and situations of working offshore. One sign of a highly trained seafarer is their ability to make fast and accurate decisions during crucial and life threatening situations ("Filipinos are Global Seafarers", 2015).

Wang (2012) mentioned, weather conditions, port conditions and vessel traffic as other components within the environmental factor. Presently, port conditions are becoming a problematic issue for ships and seafarers. When in ports, additional burden of safety, unpredictable work hours, pressures on shifting and maneuvering operations along with increased vessels' inspections causes stress and fatigue to seafarers. Weather and sea conditions en route to ports such as restricted visibility, high traffic density and tidal windows are another important factors which should not be ignored as contributory factors to seafarers' stress.

**Table 6. Summary Table on the Factors Contributory to Stress and Fatigue of Filipino Seafarers**

Indicators	WM	VI	Rank
1. Psychological	2.14	MS	3.5
2. Physical	2.26	MS	1
3. Emotional	2.18	MS	2
4. Environmental	2.14	MS	3.5
<b>Composite Mean</b>	<b>2.18</b>	<b>MS</b>	

Table 6 shows that different factors contributory to stress of Filipino seafarers. As gleaned from the table, all of the factors are moderately stressful with a composite mean of 2.18. Physical stress topped it all with a composite mean of 2.26 followed by emotional (2.18) while psychological and environmental both ranked last with 2.14 as the weighted mean. It clearly exhibits that Filipino seafarers easily get stressed and be affected by the various physical stressors that affect their work performance and even their relationship with others. Each crew member is tasked with duties and responsibilities that he or she has to perform every day. However, the sudden or unexpected changes happening on board that affect their daily routine caused a seafarer a lot of trouble. Extended or long working hours, in particular, create an imbalance to the seafarer's system and thus affect his body clock. Also, heavy workloads and dealing with some paper works that involves mental and physical strengths and abilities also induced stress to a seafarer. Hetherington, Flin, and Mearns (2006) in their study claimed that the situations in which seafarers work are becoming increasing and demanding. Especially during loading and discharging operations in port, a seafarer has to work for more than 12 hours at times despite the work rest mandates by STCW Convention.

With prolonged exposure to this factors, stress may be evident by the presence of sleep disturbances, headache, short temper, upset stomach, job dissatisfaction, difficulty in concentration and low morale (Murugan & Rengamani, 2012).

Emotional factors seem to have contributed also to the stress and fatigue of Filipino seafarer as it ranked next to physical contributors. The relationship of a seafarer to the other crew members is of great importance as it also leads to a smooth working environment which leads to a successful voyage. Moreover, a seafarer's emotion, mood and overall dispositions have an effect on his job performance, creativity, decision making, negotiations, turnover, teamwork and leadership. The result of Carotenuto, Molino, Fasanaro and Amenta confirmed that seafaring is associated with mental, psychosocial, and physical stressors. To which they identified that the most important factors were separation from family, loneliness on board, fatigue, multi-nationality, limited recreation activity, and sleep deprivation.

As seen from the result of Table 7, almost all variables tested were considered significant. This was observed since the obtained p-values of area of work, current occupational category, length of years working in the maritime industry, length of years in the current

position, type of ship, age current marital status and total gross income were all less than 0.05 alpha level, thus the null hypothesis is rejected.

**Table 7. Difference of Responses on the Psychological Factor Contributory to Stress and Fatigue of Filipino Seafarers When Grouped According to Profile**

Profile	F-value	p-value
Area of Work	21.910**	0.000
Current Occupational Category	4.841**	0.000
Length of Years Worked in the Maritime Industry	10.311**	0.000
Length of Years in the Current Position	2.997	0.032
Type of Ship	4.793*	0.009
Length of Years Working in the Ship	2.638	0.051
Age	21.229**	0.000
Current Marital Status	13.202**	0.000
Total Gross Income	2.261*	0.025

*Legend: \*Significant at p-value < 0.05; \*\*Significant at p-value < 0.01*

This means that a significant difference on psychological factor when grouped according to profile exists. This was supported using Post Hoc analysis (Scheffe method) where all categories in each variable show significant difference. Test revealed that seafarers working in coastal areas experience greater psychological stress compared to seafarers working in blue water and offshore areas.

Furthermore, catering attendants and seafarers working 1-5 years in the current position are more psychologically stressed compared to the other ranks and years of experience respectively. The analysis also shown that seafarers working on dry cargo vessels, ages 18-30 years old, single and earning less than \$10,000 experience significantly higher level of psychological stress when compared to the other respective variables in each profile.

This shows that the psychological factors contributory to stress and fatigue of seafarers differ according to the variables previously mentioned. The stress and fatigue felt and experienced by the seafarers depends on different elements to which the occupational category or the rank is one of them. Loneliness, homesickness and fatigue are three of the most debilitating and damaging psychological problems among seafarers. These are caused by long periods away from home, the reduced number of seafarers per ship, and increased work load. All of these stresses of any ship are felt by the crew (How to Keep a Distant Relationship, 2016). Carotenuto,

Molino, Fasanaro and Amenta (2012) revealed in their study that masters, mates and engineers report less work pressures than by the others. They have great responsibility and must be able to make clear cut decisions. This is perhaps the psychological plus of having responsibilities, involvement in organizational tasks and making decisions. While deck ratings and catering attendants report the lowest level of satisfaction. Onboard stress can be considered to be a virtually endless list of human tragedies. IMO estimates that 80% of marine accidents are caused by human factors which led to some cases of fatalities. Moreover, findings specified that risk of stress is higher in coastal vessels navigating for shorter voyages, especially during the period of rest at night to which risks related to fatigue are considerably higher in ratings than in officers, and in younger seafarers compared with the older ones (aged more than 35 years).

However, respondents who belong to the same length of years working in the ship seem to have experienced the same level of stress and fatigue as contributed by the different psychological factors given.

**Table 8. Difference of Responses on the Physical Factor Contributory to Stress and Fatigue of Filipino Seafarers When Grouped According to Profile**

Profile	F-value	p-value
Area of Work	9.431**	0.000
Current Occupational Category	2.883*	0.005
Length of Years Worked in the Maritime Industry	4.072*	0.003
Length of Years in the Current Position	0.535	0.659
Type of Ship	0.226	0.798
Length of Years Working in the Ship	1.337	0.264
Age	4.468*	0.013
Current Marital Status	3.542*	0.031
Total Gross Income	0.753	0.453

Legend: \*Significant at  $p\text{-value} < 0.05$ ; \*\*Significant at  $p\text{-value} < 0.01$

Table 8 shows the significant difference on physical factor contributory to stress and fatigue when grouped according to profile variables. It was found out that there were significant difference observed on area of work (0.000), current occupational category (0.005), length of years working in the maritime industry (0.003), age (0.013) and current marital status (0.031) because the obtained-values were less than 0.05. This indicates that the respondents experience

with regards to physical factor vary as to the above mentioned profiles.

Post Hoc Test shows that seafarers working in coastal areas experience greater physical stress compared to seafarers working in blue water and offshore areas. Furthermore, catering attendants and seafarers working 1-5 years in the current position are more physically stressed compared to the other ranks and years of experience respectively. The analysis also shown that seafarers whose ages ranges from eighteen to thirty years old, single and earning less than \$10,000 experience significantly higher level of physical stress when compared to the other respective variables in each profile.

Undoubtedly, coast trading seafarers experience a different level of stress and fatigue than that of the blue water and off-shore ones due to continuous and irregular work schedules. Moreover, seafarers who are assigned on catering department also experience stress far different from those in the engine. This is because mess men or catering attendants serve everyone onboard, from Master down to deck and engine ratings. Also, single seafarers take stress the other way as those married ones do. Their reception of the physical factors contributory to stress and fatigue is affected by their orientation, background and personal and professional history. Smith, Allen and Wadsworth (2008) disclosed that latest studies have shown that physical stressors in the workplace tend to demonstrate increasing relations with self-reported stresses at work and poor health results. As part of an extensive study of the working population in general, exposure to work hazards, combined with changes in work schedules and long hours, were found to be of significant contribution to the stress of an individual.

Still on physical factors, Barnett (2012) agreed that fatigue is a major health problem, with significant proof to show how prolonged sleep deprivation can be a risk factor in diseases such as cardiovascular disease, obesity and diabetes. Intensive shipping operations means that seafarers often work for longer hours and irregular schedules, while factors such as vibrations, noise, trade routes, port of calls, cargo operations and other activities can reduce the ability of seafarers to have quality sleep throughout their rest periods.

It can be gleaned from Table 9 that there was significant difference on area of work, current occupational category, length of years working in the maritime industry, age and current marital status since the obtained p-values were less than 0.05 alpha level. Post Hoc Test revealed that seafarers working in

coastal areas are easily influenced by emotional stressors onboard compared to seafarers working in blue water and offshore areas.

**Table 9. Difference of Responses on the Emotional Factor Contributory to Stress and Fatigue of Filipino Seafarers When Grouped According to Profile**

Profile	F-value	p-value
Area of Work	9.688**	0.000
Current Occupational Category	3.938**	0.000
Length of Years Working in the Maritime Industry	5.640**	0.000
Length of Years in the Current Position	2.235	0.085
Type of Ship	0.144	0.866
Length of Years Working in the Ship	2.060	0.107
Age	9.775**	0.000
Current Marital Status	6.573*	0.002
Total Gross Income	0.771	0.442

Legend: \*Significant at  $p$ -value < 0.05; \*\*Significant at  $p$ -value < 0.01

Furthermore, cadets and seafarers working 1-5 years in the current position are more emotionally stressed compared to the other ranks and those who have more years of sea experience respectively. The analysis also shown that seafarers whose ages ranges from eighteen to thirty years old, single and those who are earning more than \$10,000 experience significantly higher level of emotional stress when compared to the other respective variables in each profile.

Those who have already spent more years in the seafaring industry have become used to the environment and see everything happening on board as part of the industry experience. However, those neophyte or have just started going onboard, like deck cadets, are still in the adjustment process and still find difficulties handling the stressors they encounter emotionally. Moreover, being away from family is bothersome to a seafarer. Those married ones and have children tend to be bothered by the thoughts of their family and being away from them and missing the most important events in their life. Thus, these intrude on their emotions and make them stressed. Also, having a long distance relationship with their loved ones and being away from family for a long period of time with very limited way of communication are also emotional burdens to seafarers.

Seafarers who do not communicate with loved ones lose the common bonds of experience and can

begin a spiral of disconnection that can have deleterious effects throughout families and entire communities. Further, being away from land for so many months and with only the same few comrades for companionship can result in feelings of boredom, depression, exclusion, anger, despair – a whole array of feelings associated with the psychological state of alienation (Kinthart, 2017).

On the other hand, according to a study of Australian seafarers, the biggest cause of stress though, was the relationship between home and work. In fact at its worst, family problems are even known to contribute to suicides at sea (How to Tackle Fatigue, 2016).

**Table 10. Difference of Responses on the Environmental Factors Contributory to Stress and Fatigue of Filipino Seafarers When Grouped According to Profile**

Profile	F-value	p-value
Area of Work	10.446**	0.000
Current Occupational Category	2.203*	0.029
Length of Years Working in the Maritime Industry	2.751*	0.029
Length of Years in the Current Position	0.187	0.905
Type of Ship	4.323*	0.015
Length of Years Working in the Ship	0.275	0.844
Age	3.901*	0.022
Current Marital Status	2.663	0.072
Total Gross Income	1.976*	0.049

Legend: \*Significant at  $p$ -value < 0.05; \*\*Significant at  $p$ -value < 0.01

Table 10 reveals the significant difference of environmental factors when grouped according to profile of the respondents. There was significant difference observed on area of work, current occupational category, length of years working in the maritime industry, type of ship, age and total gross income since the obtained  $p$ -values of 0.000, 0.029, 0.015, 0.022 and 0.049 were less than 0.05 alpha level. This only implies that a significant difference observed and the respondents have different experience on the environmental factors. As revealed by Post Hoc test, seafarers working in coastal areas experience greater environmental stress compared to seafarers working in blue water and offshore areas. Furthermore, catering attendants and seafarers working 1-5 years in the current position are more affected by environmental stressors compared to the other ranks and years of experience respectively. The analysis also shows that seafarers working on dry

cargo vessels, ages 18-30 years old and those earning less than \$10,000 experience significantly higher level of environmental stress when compared to the other respective variables in each profile.

Stress encountered and felt by seafarers depends on the environment to which they belong. A deck and catering attendants' duty vary from those of the officers the same way, his place of assignment differs also from the engine. Thus, this reflects diversity in the manner seafarers' deal with stress brought by the factors around them. Moreover, the type of vessel to which a seafarer is boarded is also a factor as one may find his job in a dry cargo vessel more stressful than those in the other types of vessel. Furthermore, environmental disturbances, whether man-made or natural seem to have an effect on a seafarer's life.

The nature of a seafaring job could be one of the most demanding and stressful ones. This is because seafarers work under different weather conditions while the ship is traversing a deep sea. Aboard the ship, a seaman may be exposed to both man-made and natural risks such as; severe weather conditions, accidents and serious untoward incidents. These in turn, bring him stress and affect his performance (Barranta, 2012).

Extreme working conditions onboard ships put seafarers' health and stress at risk at all times. Noise down below the engine room, extremely high temperature while working on deck associated with continuous exposure to direct sunlight or harsh weather can lead to health complications. However, extended and close exposure to ultra violet radiation from the ship's radar and radio has also been renowned as one of the reasons for health problems in the past for officers assigned in watch keeping duties. On some ships, the crew cabins and living quarters are at times noisy, hot and not well ventilated, which will induce production of bacteria and only a fully healthy individual with a perfect immune system can face it.

On the other hand, with regards to areas of work and types of ship, Murugan and Rengamani (2012) said that there are significant differences with work environment between cargo and passenger vessels. Seafarers on cargo vessels comprises of around 10 to 20 seafarers and have more physically stressful jobs, especially on container vessels (i.e. securing of containers). Additionally, seafarers on cargo vessels or tankers are more exposed to different classes of dangerous cargoes. In contrary, most passenger vessels consist thousands of occupants which includes passengers and are less susceptible to motions caused by diverse weather conditions since they are equipped

with stabilizers to compensate vessel's movement. Hence, environmental stress on passenger vessels is less when compared with the stress on cargo vessels.

### **Proposed Action Plan**

The proposed plan of action to lessen the stress experienced by Filipino seafarers onboard vessel focuses on reducing the factors that contribute to physical stress in terms of unpredictable working hours, unwanted sexual advances and routine administrative tasks as well as to lessen the factors that contribute to emotional stress in terms of tension between crew and officers, dealing with ambiguous and delicate situations and personality clash with others.

These issues might be addressed through consultation with shipping companies to review the existing policies on working hours and shipboard working arrangement; raise awareness to ship's senior officers of the significance of working hours on seafarers' fatigue; dissemination of information regarding onboard complaint procedures regulated by MLC 2010 to monitor unwanted circumstances onboard and rigid training and creation of training that will strengthen more the administrative and technical skills of seafarers.

Furthermore, other strategies might help to lessen the factors that contribute to emotional stress through personality development course on maritime institutions to improve crew openness and more social functions could be held to acquaint crew with the people they work with; the crew can be trained how to control their emotions and handle conflicts; facilitation of stress management seminars for seafarers; and incorporation of topics regarding stress management to the curriculum of maritime institutions.

### **CONCLUSION AND RECOMMENDATION**

All of the respondents are male to which majority are 31-40 years old, married, officers on board, and are in the blue water area of work. Most of them have been in the maritime industry for more than 16 years and have been in their current position for 1-5 years. Moreover, respondents are boarding in a dry cargo and tanker vessels and have been receiving a total gross income of \$10,000 and below. Filipino seafarers find factors contributory to stress and fatigue to be moderately stressful to which the physical factors prevail over emotional, environmental and psychological. There is a significant difference of responses on the environmental, emotional, physical

and psychological factors contributory to stress and fatigue of Filipino seafarers when grouped according to profile. A plan of action was proposed to lessen and address the factors contributory to stress and fatigue of Filipino seafarers.

It is recommended that the Shipping companies may devise personal and technical skill development course for seafarers. Maritime schools in coordination with maritime companies may work together to materialize on the job trainings that will prepare the maritime students to the actual maritime world.

Maritime training centers, in coordination with shipping companies and maritime schools, may integrate communication and personality development course in their list of trainings. Course topics may include the following: communication skill development, managing cultural diversity, handling culture-based discrimination, self-esteem and confidence training, stress and fatigue management.

Maritime students may join or get themselves involve with community and academic activities that will give them personal and professional growth.

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