Conceptual Framework

Depression

According to World Health Organization (WHO, 2008), “Depression is a common mental disorder that involves depressed mood, loss of interest or pleasure, feelings of guilt or low self-worth, disturbed sleep pattern or disturbed appetite, low energy, and poor concentration”.

Depression is described as a bunch of symptoms portrayed by sadness and “a loss of interest in almost everything in everyday activities American Psychiatric Association (APA, 1994). Depression is a state of low mood and aversion to activity that can affect a person's thoughts, behaviour, feelings and physical well-being (Salmans, 1997). In general population, lifetime prevalence rate of 17%, a significant number of men and women suffering from depression at some time in their lives and the lifetime prevalence rate is 17% (Segrin and Flora, 2000).

Sethi (2009) stated that the essence of condition is a low mood, along with reduced levels of activity and energy. The low or depressed mood is not just a normal day to day variation which is transient but should be sustained and persistent, present throughout the day and almost every day for at least two weeks. Mood usually does not change for better in response to changes in circumstances. People feel worst in the mornings and better in the evenings. He is not able to enjoy anything and loses interest in all activities including work and family. Appetite is lost along with weight loss. Sleep is disturbed with difficulty maintaining the sleep and waking up very early in the morning. Libido is lost as a part of anhedonia.

Depression is an affective, or mood disorder. It is an illness that pulls its sufferers in a world of self-blame, confusion, and hopelessness. It is an illness of the mind and body both. Some researchers could argue depression as a way of coping with life’s pressures (Schwartz & Schwartz, 1993).

Clinical depression is a serious mental illness that affect one’s life. The major component of depression is a loss of interest in activities which were once found to be interesting and pleasurable. In fact, in order for an individual to be diagnosed with
major depression, a loss of interest in activities that were once found pleasurable must be present (Schwartz & Schwartz, 1993). For some depressive individuals, there is even a loss of interest in life itself. Each year an average of 5,000 American, give up on their lives. How many of these people were suffering from depression is not known, but it is believed a vast majority of them were suffering from depression.

Depression is a psychological state characterized by feelings of extreme sadness or despair, a pessimistic sense of inadequacy and a lack of activity that presents with depressed mood, feelings of guilt or low self-worth, disturbed sleep or appetite, low energy, loss of interest or pleasure and poor concentration last for at least two weeks or longer. An individual may not be able to take care of his or her everyday responsibilities if these problems become chronic and lead to substantial impairments. Sometimes, depression can lead to suicide, a tragic fatality which is reason for the loss of about 850, 000 lives every year (Corsini, 1999).

**Symptoms of Depression according to DSM-V**

A. Five or more of the following symptoms have been present during the same 2-week period and represent a change from previous functioning in the individual, at least one of the symptoms is either

   (1) Depressed mood or

   (2) Loss of interest or pleasure

(Note: Symptoms that are clearly attributable to another medical condition should be excluded.)

1. Depressed mood most of the day, nearly every day, as indicated by either subjective report (such as: feels sad, empty, and hopeless) or observation made by others (such as: appears tearful).

(Note: In children and adolescents, can be irritable mood.)

2. Markedly diminished pleasure or interest in all, or almost all, activities most of the day, nearly every day (as indicated by either subjective account or observation.)
3. Significant weight loss when not dieting or weight gain (such as a change of more than 5% of body weight in a month), or decrease or increase in appetite nearly every day.

(Note: In children, consider failure to make expected weight gain.)

4. Insomnia or hypersomnia nearly every day

5. Psychomotor agitation or retardation nearly every day (observable by others, not merely subjective feelings of restlessness or being slowed down).

6. Fatigue or loss of energy nearly every day.

7. Feelings of worthlessness or excessive or inappropriate guilt (which may be delusional) nearly every day (not merely self-reproach or guilt about being sick).

8. Diminished ability to think or concentrate, or indecisiveness, nearly every day (either by subjective account or as observed by others).

9. Recurrent thoughts of death (not just fear of dying), recurrent suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide.

B. The symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.

C. The episode is not attributable to the physiological effects of a substance or to another medical condition.

(Note: Criteria A-C represents a major depressive episode.)

(Note: Responses to a significant loss (e.g., bereavement, financial ruin, losses from a natural disaster, a serious medical illness or disability) may include the feelings of intense sadness, rumination about the loss, insomnia, poor appetite, and weight loss noted in Criterion A, which may resemble a depressive episode.)

Although such symptoms may be understandable or considered appropriate to the loss, the presence of a major depressive episode in addition to the normal response to a significant loss should also be carefully considered. This decision inevitably
requires the exercise of clinical judgment based on the individual’s history and the cultural norms for the expression of distress in the contest of loss.

D. The occurrence of the major depressive episode is not better explained by schizoaffective disorder, schizophrenia, schizophreniform disorder, delusional disorder, or other specified and unspecified schizophrenia spectrum and other psychotic disorders.

E. There has never been a manic episode or a hypomanic episode.

(Note: This exclusion does not apply if all of the manic-like or hypomanic-like episodes are substance induced or are attributable to the physiological effects of another medical condition.)

Specify:
- With anxious distress
- With mixed features
- With melancholic features
- With atypical features
- With mood-congruent psychotic features
- With mood-incongruent psychotic features
- With catatonia.
- With peripartum onset
- With seasonal pattern (recurrent episode only)

Perceived Stress

“Every stress leaves an indelible scar, and the organism pays for its survival after a stressful situation by becoming a little older.”

-Hans Selye (1907-1982)

Stress refers to a wide range of physiological changes caused by physical or psychological components or a combination of these. Whatever the type or cause, the effect of stress on the body results in a very specific psychological response that Selye (1957) coined the ‘Stress Response’, this response involves many psychological changes within the systems of the body.
According to Morrow (2011), any situation or thought that makes you feel frustrated, angry, or anxious can lead to stress. A state of mental tension and physical arousal produced by a stressor is called Stress. Sometimes perception of stress is more harmful than actual stress. The perceived or actual harm on physical or psychological homeostasis of an individual refers to stress. “Stress responses” are elicited by the Disrupted homeostasis, meaning the activation of central and peripheral neuroendocrine mechanisms are responsible for various adaptive responses and behaviours (Selye and Chrousos, 1997).

Perceived stress is a subjective feeling or thought of an individual about how much stress they are experiencing at a given point of time. The perception of stress is affected by the changes occurring in individual’s life, ability of individual to deal with problems and daily hassles, unpredictability of upcoming life threats. It is not measuring the types or frequency of stressful life events but the perception about the severity of these events. It is affected by the ability to handle such stressors. Different individuals may suffer from similar life events but perception about these events determines experience of stress (Cohen, et al., 1983).

Lazarus and Folkman (1984) defined stress as a relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her wellbeing.

Benson and Stuart (1992) stated that stress is the perception of a threat to one's physical or psychological well-being and the perception that one is unable to cope with that threat.

Every person perceives the stress in different ways, in some cases; one person’s stressor is another person’s thrill. Some look forward to a chance to be on stage, others dread it. The different reactions people have to the environment events is due in part to the way in which they perceive the situation. The same event will be interpreted differently by different people. A person who feels overwhelmed and is concerned that he or she will be unable to deal with a stressor is more likely to experience negative consequences than a person who feels will be able to manage it.
Our physiological reactions to stress are related to how much of a threat we perceive ourselves to be in and how much control we believe we have over the situation. When we perceive our trouble as more threatening than challenging, or our capacity to cope as more helpless than promising changes that result may lead to illness.

Perceived stress is a measure of the degree to which situations in one’s life are appraised as stressful. Perceived stress can be viewed as the outcome of transactional interaction between the person and his environment. An outcome variable measuring the expressed level of stress as a function of some stressful events, individual’s process of coping, personality type etc, can be viewed as Perceived stress.

McEwan (1998) explained that a controllable amount of perceived stress is in fact healthy and would challenge the individuals to grow. However, the functioning of the immune system may get influenced due to too high level of perceived stress.

Lazarus (1999) found that stress can be perceived as any form of event that strains an individual’s ability to cope. No one’s life is free of stress regardless of how sensible you are.

Phillips (2013) stated perceived stress as the feelings or thoughts that an individual has about how much stress they are under at a given point of time or a given time period.

Perceived stress is a dynamic multi-dimensional concept, with a wide range of causative and conducive factors. The perceptions comprises of medical, physical, psychological and psychosocial aspects and are both culturally and socially context dependent. (Moore and Cooper, 1996)

Phillips (2013) stated that perceived stress can be described as feelings about the uncontrollability and unpredictability of an individual’s life, how often one has to deal with irritating hassles, how much change is occurring in his/her life and confidence in their ability to deal with the problems. It is not measuring the types or frequencies of stressful events which have happened to a person but, rather how an individual feels about the general stressfulness of their life and their ability to handle stress. Factors such as personality, coping resources, and support are appraised by the
individual suffering from similar negative life events. Perceived stress reflects the interaction between a person and his environment which he appraises.

A model that helps explains the course of biological decomposition under excessive stress is the General Adaptation Syndrome (GAS). This model was introduced by Hans Selye in the year 1936. Selye found that the body’s reaction to sustained and excessive stress typically occurs in three major phases:

a) Alarm Reaction: In this phase the body’s defensive forces are called to alarms by the activation of the autonomic nervous system

b) Stage of Resistance: In this phase biological adaptation is at the maximum level in terms of bodily resources used

c) Exhaustion: In this phase the bodily resources are depleted and the organism loses its ability to resist so that further exposure to stress can lead to illness and death.

Types of Stress

According to Canadian Physiologist Hans Selye (1976), the notion of stress can be divided into two types of stress.

**Eustress:**

We can describe Eustress as a good stress. A positive response an individual has to a specific stressor, which can depend on one's current feelings of control, desirability, place, and time of the occurrence of the stressor can be called as Eustress. (Fevre et al., 2006). Eustress occurs when the gap between what one has and what one wants in his life is slightly pushed, but not overwhelmed. The goal is not too difficult reach but is still slightly more than one can handle. This leads to challenge and motivation since the goal is in sight. The function of the challenge is to motivate a person toward improvement and achieving the goal (Smith, 1991). Challenge is an opportunity-related emotion that allows people to achieve unachieved goals (Smith et al., 2014). Eustress is indicated by hope and active engagement
(Hargrove et al. 2013). Eustress has a significantly positive correlation with life satisfaction and hope (O’Sullivan, 2010). It is assumed that experiencing chronic stress, either in the form of distress or eustress, is negative. However, eustress can result in physiological thriving influenced by the biological processes implied in psychological recovery and immunity (Achor et al., 2013).

**Distress:**

Distress can be described as a bad or negative stress. An aversive state in which an individual is unable to adapt to stressful sources and it results in stress and he/she may shows maladaptive behaviours (National Research Council, 1992). It occurs when the demands placed on the body (in the larger sense that includes both the physiological and the psychological aspects) exceed its capacity to expend energy in maintaining homeostasis. The demand stimulus may be perceived as pleasant or unpleasant. According to Selye persistent stress which is not resolved through coping or adaptation is called distress, and it may lead to some kind of anxiety, withdrawal from the situation, and depressive symptoms. Distress interferes with one's ability to accomplish a job or task (Fevre et al., 2006). Individuals under constant distress are more likely to become sick, psychologically or physically. There are clear responses association between mental distress and major causes of deaths across the range of distress (Russ et al., 2012).

**Types of Stressors**

1) **Crisis:** These types of stressors are unforeseen and unpredictable and are is completely out of the control of an individual. Crisis can be of any type: devastating natural disasters, such as major floods or earthquakes, wars, etc. Though rare in occurrence, this type of stressor typically causes a great deal of stress in an individual's life. A study conducted by Stanford University found that after natural disasters, the affected individuals experienced a significant increase in the stress level. (Pastorino and Doyle-Portillo, 2009)
2) Daily Hassles: This category of stressors include stress involved in making decisions, meeting deadlines at work or school, traffic jams, encounters with irritating personalities, etc. conflicts with other people indicates this type of stress. Not everyone perceives particular event as stressful, so the daily stressors differ for person to person.

There are three types of psychological conflicts that can cause stress.

The approach-approach conflict occurs when an individual has to choose between two equally attractive options, i.e. whether to go see a movie or to go see a concert (Pastorino and Doyle-Portillo, 2009).

The avoidance-avoidance conflict is that type of conflict in where the choice has to be made between two equally unattractive options, for example, to take out a second loan with unappealing terms or to face foreclosure on one's house (Pastorino and Doyle-Portillo, 2009).

The approach-avoidance conflict occurs when a person is forced to make a choice between whether or not to take part in something that has both attractive and unattractive traits—such as whether or not to pursue an expensive degree (meaning taking out loans now, but also meaning a quality education and employment after graduation).

3) Major life events: Major life events such as marriage, going to college, death of a loved one, birth of a child, etc. These events can be either positive or negative. Various researchers have found that major life events are somewhat rare to be major causes of stress, due to its rare occurrences. Events that have occurred within the past month generally are not linked to stress or illness, while those of chronic events that occurred more than several months ago are linked to stress and illness (Cohen et al., 1998) and personality change (Jeronimus, et al., 2014)

Quality of life

Quality of life indicates the amount of satisfaction one is deriving from one’s own overall life. It is an ongoing perception that the present time of one’s life, or even one’s life as a whole, is fulfilling, meaningful and pleasant. The word ‘quality’
suggests an assessment of value relative to some standard. The assessment is most commonly expressed in terms of levels of satisfaction or dissatisfaction. The word ‘life’ suggests a reference to the total human experience and is not restricted to any specific domain of life. Quality of life according to World Health Organization (WHO, 1997) is person’s perception of their position in life in regard to their culture and value systems and their goals and expectations. It is a broad concept affected in a complex way by the person's physical health, psychological state, personal beliefs, social relationships and their relationship to salient features of their environment.

Quality of Life (QOL) can be described as an all round development of person in terms of education, health and social life. Quality of Life is very important for every individual because only economic development is not essential. It is very important for the purpose of improving the health of an individual. Quality of Life is used in many contexts comprising of good health and medicine (Rao, 1965).

Quality of life is considered to be the central aspect of human life and welfare. It is an important concern and the ultimate goal of modern life which human beings strive to achieve throughout their lives and are strongly motivated to attain it.

Till date, no consensus exists to what quality of life actually is. It is often taken as the behavioural process by which humans maintain balance between their various needs and the obstacles in their environments. It has also been defined as the value assigned to the duration of life as modified by the impairments, functional states, perceptions and social opportunities that are influenced by disease, injury, treatment or policy (Patrick & Ericson, 1993), a personal statement of the positivity or negativity of attributes that characterize one’s life (Grant et al., 1990).

Quality of life depends upon the degree and the extent to which the person feels he is leading a meaningful life. It consists of two components. The first is a Physical aspect which includes health, diet, as well as protection against pain and disease. The second component is Psychological in nature; this aspect includes stress, worry, positive or negative emotional states and pleasure. It can be referred to the aspects of an individual's well-being (physical, psychological, social), as well as aspects of the environment and a person's standard of living (Harding, 2001).
The term 'Quality of Life' was originally coined in the USA in the post-war period to describe the effect of material privileged circumstances on people’s lives and later also included education, health and welfare, economic and industrial growth. In the socio-medical literature, quality of life has been equated with a variety of terms, including life satisfaction (Brown, Rawlinson & Hilles, 1981), self-esteem (Ziller, 1974), well-being (Fletcher & Bulpitt, 1985), happiness (Shinn & Johnson, 1978), health (Frank-Stromborg, 1984) and meaning of life (Berg, Hallauer & Berk, 1976).

Veenhoven (2000) defined four categories of quality of life by distinguishing between opportunities (chances) for a good life and the good life (outcomes) itself:

i) Liveability of the environment (environmental chances/social capital)

ii) Life-ability of the individual (personal capacities/psychological capital)

iii) External utility of life (a good life must have an aim other than the life itself, or higher values)

iv) Inner appreciation of life (inner outcomes of life/the perceived quality of the life).

Each area of quality of life can also have an effect on the others. Thus, the quality of life is multidimensional and its components affect each other as well as it in overall. It is made up of both positive and negative experiences and effects, and values and self evaluations of life may change over time in response to life and health events and experiences.

According to Ventegodt et al. (2003) quality of life (QOL) means a good life and a good life is the same as living a life with a high quality. All great religions and philosophies have a notion of a good life ranging from saying that a good life is attained by practical codes of conduct to request to engage in a certain positive attitude to life or to search into the depths of own being.

Notions about a good life are closely linked to the culture to which one belongs. The cultural conditioning in people from western culture makes them tend to include happiness, fulfilment of needs, functioning in a social context, etc. It is multidimensional and includes loving and living in good health. According to some researchers there exists a relationship between human value orientations and the quality of life (Ventegodt, Merrick, Andersen, 2003).
Domains of Quality of life

There are four domains that determine the quality of life of an individual. According to World Health organization (WHO) a scale has been constructed that measures the quality of life of an individual on four domains. These domains are physical, psychological, social relation and environment. They have constructed a scale name World Health Organization Quality Of Life-BREF (WHOQOL-BREF).

- Physical domain: Energy and fatigue, pain, discomfort, sleep, and rest
- Psychological domain: how we feel about our bodily image and appearance, negative feelings, positive feelings, self-esteem, thinking, learning, memory, and concentration
- Social relation domain: Personal relationships, social support, and sexual activity of an individual
- Environment domain: financial resources, freedom, physical safety and security, health and social care: accessibility and quality, home environment etc

Quality of Sleep

In the rhythm of life, sleep is as important as wakefulness. It is a balancing act of nature. As a state of consciousness, it is marked by reduced ability to react to stimuli, voluntary muscular movements, and thought processes. Sleep is restorative and vital part of life (National heart lung blood institute, 2005). Approximate one-third of an individual’s life is spent sleeping. Sleep is crucial in helping the mind and body to be renewed and refreshed (Searle, 2000). The typical individual needs 7-8 hours of sleep a night. Noland et al. (2009) defined sufficient sleep as being “that amount necessary to permit optimal daytime functioning.” People who do not get enough sleep are significantly more likely to be unable to work well and efficiently, exercise, eat healthy, have sex or engage in leisure activities. The inability to perform these tasks can have a large negative impact on a person’s overall health (National sleep foundation, 2009).

According to a general behavioural definition, “sleep is a reversible behavioral state of perceptual disengagement from, and unresponsiveness to the environment” (Carskadon and Dement, 2005; Mlkely, 2010). The physiological changes during
sleep are well established. Sleep is a cyclical process, which alternates with wakefulness. The method for physiological measurement of sleep is based on the recording of electrical brain activity - electroencephalography (EEG), of at least one EEG-lead (usually C3-A2 or C4-A1 according to the 10-20 system (Jasper, 1958).

During periods of brain maturation sleep is particularly important (Dahl, 1999). Because good sleep practices are essential for children, sleep education should occur early and often during children’s education, yet schools and school psychologists often overlook sleep when thinking about “problem” students.

Researchers estimate between 15% and 30% of children experience sleep problems at some point during childhood (Dawson, 2005). To put this statistic into perspective, the rate of prevalence for Attention Deficit/Hyperactivity Disorder (ADHD), a more widely publicized issue that often results in specially designed instruction, is 3% to 5% of school children (Stanley, 2011).

There are two main types of sleep: Rapid-eye-movement (REM) sleep, and Non-REM (NREM) sleep (Dawson, 2005).

There are four stages in Non-REM sleep. In stages I and II, sleepers are easily awakened, and in stages III and IV, it is difficult to rouse sleepers. Dreaming occurs in REM sleep, the eyes move rapidly, and the body is essentially paralyzed because nerve impulses to muscles are blocked. Individual feel the urge to sleep because of the release of the hormone melatonin that begins to taper off as the hormone cortisol increases in the body, signalling wakefulness (Dawson, 2005).

It is referred to as the circadian rhythm when this cycle occurs naturally and is responsible for alertness in the morning and late afternoon hours, and sleepiness in the noon and evening hours (Sadeh et al., 2000). There are four main effects of sleep disturbances: sleepiness, tiredness, changes in attention and performance, and emotional changes (Dawson, 2005).

The increased effort it takes to perform emotional, physical, and cognitive tasks are the hallmark of sleep disturbances (Dahl, 1999). The drowsy feeling one gets when engaging in less stimulating, or repetitive tasks is referred as sleepiness;
whereas tiredness can be defined as fatigue felt when the task at hand requires motivation, especially for an abstract reward (Dawson, 2005).

Changes in attention and performance can mean children have more microsleeps or mental lapses while engaged in simple tasks as compared to the adults. Further, individuals experiencing changes in attention and performance can have symptoms that can also be seen in those of ADHD, or a lack of ability to complete tasks that require attention in two or more areas (Dawson, 2005).

Finally, emotional changes from lack of sleep may result in children having greater fluctuations in emotional states and less control over emotions that increase their irritability, impatience, and tolerance for frustration (Dawson, 2005).

The two main states of sleep, Non-Rapid Eye Movement (NREM) and Rapid Eye Movement (REM) sleep. Four stages of NREM sleep are recognized; stages 1-4. To differentiate between REM sleep from NREM sleep, it is necessary to also record eye movements (electrooculography, EOG) and muscle tone (electromyography, EMG) (Carskadon and Dement, 2000; Stanley, 2011).

Circadian Rhythms: The 24-Hour Clock

The daily rhythms in physiology and behaviour collectively refer to circadian rhythms. They control the sleep-wake cycle, modulate physical activity and food consumption, and over the course of the day regulate body temperature, heart rate, muscle tone, and hormone secretion. These rhythms are generated by neural structures in the hypothalamus that function as a biological clock (Dunlap et al., 2004).

The Restorative Function of Sleep

The effects of sleep on restoration and tissue renewal are best studied in animals. The rate of epidermal mitosis (Bullough, 1948) and myocardial protein synthesis normally increases during sleep (Rau and Meyer, 1975). However, several indirect indicators link sleep with synthetic processes in man.

Growing infants sleep much of the time and the 24hours hormone pattern is such that anabolic processes would be facilitated during sleep and catabolic processes during wakefulness (Adam and Oswald, 1983). Thus, there is a rise in body
temperature and metabolism with the increased catabolism of the waking period and falls to its nadir during the night-time sleep (Mills et al., 1978).

Lower body temperature during sleep reduces the use of cellular energy, and thus conserves energy. There is a secretion of catabolic hormones, cortisol, epinephrine and norepinephrine that inhibit protein synthesis during wakefulness, and the principal secretion of Growth Hormone, GH, testosterone, and other anabolic hormones have their peak rates of growth and repair during sleep (Weitzman, 1975).

Recent research connects sleep to the immune system (Born, 1999). Under certain conditions immune activation enhances SWS and intensifies NREM sleep. On the other hand, sleep deprivation has been associated with alterations in the expression of cytokines and declines of cellular and natural immunity (Irwin et al., 2003), indicating a health promoting meaning of sleep. Many argue that the restorative process of sleep (especially SWS) is particularly important for proper brain functioning (Horne, 1978).

Sleep: Structure and Content

Basic physiological needs must be met to sustain human survival. These needs include food, water, oxygen, and sleep. Prolonged periods of sleep deprivation can cause brain damage and possibly leading to death (Coren, 1996). The average amount of sleep required for effortless optimal performance and alertness is 8-8.25 hours (Neri et al., 1997). Some individuals may require a little less or a lot more, ranging from 6-10 hours. Not only is the quantity of sleep vital, but also the quality of sleep is important. Lack of quantity or quality of sleep can decrease or impair performance and alertness (Neri et al., 1997).

A definite indication of sleepiness is when a person feels that they have to stay active in order to stay alert. De Manaceine (1894) conducted the first study using animals on total sleep deprivation. The dogs used in this experiment eventually died. From their autopsies, it was found that many of them developed small brain hemorrhages. Additional studies concluded that adult dogs die after 13 days of sleep deprivation, and puppies ordinarily die after six days of sleep deprivation (Coren, 1996).
Humans operate on a 24-hour biological clock that controls sleep patterns. During a 24-hour period, humans are usually awake during the day and asleep during the night. The circadian rhythm, which governs sleep patterns, affects different physiological and psychological functions such as melatonin levels, alertness, body temperature, growth hormones, and cognitive performance (Sawyer, 2004).

“Inadequate sleep hygiene is defined in the International Classification of Sleep Disorders as a “sleep disorder due to the performance of daily living activities that are inconsistent with the maintenance of good quality sleep and full daytime alertness” (American Sleep Disorders Association, 1990).

**Sleep Disturbances**

Approximately one third of an individual’s life is spent sleeping. In the average person, that is 25 years. Sleep is crucial in helping the mind and body to be renewed and refreshed (Searle, 2000). The typical individual needs about 7 or 8 hours of sleep a night. Therefore, how energized a person feels throughout the day is the best method to assess adequate sleep one is getting (Searle, 1995).

Noland et al. (2009) defined sufficient sleep as being “the amount necessary to permit optimal daytime functioning.” On the other hand, sleep deprivation is “the inability to get adequate amounts of sleep” (Searle, 1995). Disturbances in sleep are not ailments, these are signs of physical, psychological and spiritual problems.

Sleeplessness and insomnia can be caused by physical illnesses, psychological instability, or spiritual one-sidedness. Sleep disturbances can be viewed as the sign of something being not in order. They are kind of messages conveyed to the individual that measures are required. We become more alert to problems. The authors notice mistakes such as a life change that puts us out of our rhythm, a flood of unprocessed sense perceptions that burden us, and other things.

In human life, sleeplessness is a fundamental experience just like other afflictions. The main cause of the problem can never be relieved by just treating the symptoms. Illnesses and afflictions should not be removed or eliminated by medical treatment as they have some meaning for our lives.
Job satisfaction

The concept of job satisfaction consists of the feelings and attitudes one has about one’s job. The global feeling about the job can be considered as related to group of attitudes about various job aspects (Riggio, 2009). To conceptualize job satisfaction there are two approaches (Spector, 1997). One approach is the overall job satisfaction which is called as global approach. Overall satisfaction may consist of various factors such as salary satisfaction, nature of work, working conditions, nature of supervision, policies of the company, relation with co-mates, and promotion related opportunities and advancement.

Robbins et al. (2008) stated that positive feelings about the job are held by an individual with higher level of job satisfaction, whereas a person holds negative feelings about his/her job is dissatisfied. When an individual is talking about the employee’s attitude, most of the time it is meant as job satisfaction. In fact both are used inter-changeable’. Luthane (2002) have pointed out that over the years five job dimensions have been identified to represent the most important characteristics of job about which employees have effective responses. These are: the work itself, pay, promotion opportunities, supervision and co-workers. Robbins et al. (2008) found that job satisfaction facets (working self, pay, advancement opportunities, supervision and co-workers) correlate with high level of overall job satisfaction. Most employees are satisfied by the jobs that are interesting, provide variety of trainings, independence and control. In addition to job characteristics, scholars have also attempted to establish whether specific variables like gender, age, personality and occupational status are predictors of job satisfaction.

Job satisfaction can be defined as the positive emotional response to the job situation resulting from attaining what the employee expect from the job. It is a pleasurable emotional state of the appraisal of one’s job. We are all acquainted with the fact that every child has different qualities and attributes. These attributes may be inherited or acquired. It is the duty of a teacher to develop these qualities and enhance their efficiency. It is seen that if teachers are satisfied and motivated, it will definitely improve their performance. Various research studies indicate that employees’ satisfaction is supremely important in an organization because productivity entirely
depends on employees' satisfaction (Wagner & Goodring 1987; Wright & Crapanzano- 1997).

According to Dawis and Lofquist (1984) Job satisfaction comes from the workers' appraisal of the degree to which the work environment fulfils the individual's needs. Affective orientation of an individual toward the work role he occupies in the organization is the degree of his job satisfaction.

According to Paul Spector (1985), 'Job satisfaction is a cluster of evaluative feelings about one’s job'. He highlighted nine facets of job satisfaction which determine positive and negative attitude towards the job.

The nine facets are as follows:

(i) Pay- amount and fairness in distribution of salary or equal distribution of salary

(ii) Promotion- refers to equal opportunities for promotion and fairness in promotion

(iii) Supervision- this refers to fairness and competence of managerial tasks by one's efficient and competent supervisor

(iv) Benefits include facilities like insurance, transport facilities, residential facilities, vacations and other benefits

(v) Contingent procedure refers to sense of respect, recognition and appreciation by colleagues and management members

(vi) Operating procedure includes rules, policies and procedure that is practical in nature

(vii) Co-workers refer to perceived competence and pleasantness and cheerfulness of colleagues

(viii) Nature of work-enjoyment of the adequate and actual work

(ix) Communication-sharing of information (verbally or in writing)
Cranny, Smith and Stone (1992) stated that a mixture of cognitive and affective responses to the perceptions of what a worker wants to receive as compared to what actually he is receiving as a reward is called job satisfaction.

Cano and Miller (1992) discussed that job satisfaction is a condition of contentment with an individual's work and his working environment. Allam (1995) viewed job satisfaction as positive emotional state that results from the personal analysis of one's work or work experience.

Evans (1997) suggested that job satisfaction is ambiguous due to the lack of distinction between what is satisfying and satisfactory and that reconceptualising the term into job fulfilment and comfort in the job. In conjunction with this, Gargiulo (1997) highlights that job satisfaction is concerned with some factors i.e. participation in decision making (matters related to school and students), non-interference in work, rich salary, proper availability of working aids, good understanding between colleagues, efficient supervisor, encouragement and respect from management of the organization.

**Theories of Job Satisfaction**

Two-factor theory

Among the content theories of motivation, Herzberg (1959) two factor theory states that the motivator-hygiene factors explain satisfaction and motivation in an organization. This theory focuses on the outcomes of satisfaction and dissatisfaction. The theory further explain that certain aspects of a job cause satisfaction and motivation, but on the other hand certain aspects caused job dissatisfaction. Herzberg explained that the factors that lead to satisfaction or to dissatisfaction are different. According to him ‘the opposite of job satisfaction is not job dissatisfaction but, rather, it is no satisfaction; and the opposite of job dissatisfaction is not job satisfaction but no satisfaction’. This theory states that job satisfaction and dissatisfaction is a product of different factors – motivation and hygiene respectively. Motivation is seen as an inner force that drives a human to attain personal and organizational goals. Motivational factors are those aspects of the job that make people want to perform and provide people with satisfaction. Aspects of working environment like conditions of working, interpersonal matters, policies of the organization are included in
hygienic factors (Hackman & Oldham, 1976). Satisfiers or motivators are the factors that are relate to job satisfaction.

**Affective event theory**

In order to explain how emotions and moods influence job satisfaction, psychologist Howard M. Weiss and Russell Cropanzano in 1996 developed the affective event theory, this theory explains a link between an individual’s internal state like thoughts, emotions, psychological states etc and the reactions that occurs at their work environment which affects their work performance, organizational commitment, and job satisfaction (Wegge, van Dick, Fisher, West & Dawson, 2006). The theory proposes that affective work behaviours are explained by employee’s mood and emotions, while cognitive-based behaviours are the best predictors of job satisfaction. The positive-inducing and negative-inducing incidents on emotional front at work are distinguishable according to this theory and have some psychological impact upon employee’s job satisfaction, further resulting in internal and external affective reactions expressed through performance at job, satisfaction with job and commitment with the organization.

**Equity theory**

Equity theory, proposed by Walster, Berscheid & Walster (1973) shows how an individual perceives fairness in regard to social relationships. The theory states that during a social exchange, a person identifies the amount of input gained from a relationship compared to the output, as well as how much effort another person’s puts forth. Adding to Adam (1965) theory, Huseman, Hatfield and Miles (1987) further suggest that if a worker feels inequality between two groups, the employee is likely to feel distressed or dissatisfied due to the inequality in the input and the output. The quality and quantity of the individual’s contributions to his work is called as input, such as time spend, effort taken, hard work done, commitments made, adaptability to the conditions, flexibility in work and actions, tolerance, determination to his work, various sacrifices, trust in seniors, support from co-employees and personal skills. Whereas, an output is the positive and negative responses that an individual (employee) perceives as positive or negative such as job security, enthusiasm, pay,
job benefits, expenditure, recognition, respect, responsibilities, and some kind of achievements, appraisals, acknowledgment etc.

**Factors Affecting Job Satisfaction**

Job satisfaction is determined by various factors such as salary, working conditions, management working style etc. Apart from these factors, there are some demographic factors such as age, educational level, tenure, years in service etc.

- **Salary**

  When it comes to job satisfaction salary is viewed as the main factor. Kainth and Kaur (2010) submitted that it is very important that salaries be tied to job responsibilities and the pay increases be tied to performance rather than seniority. But king (2010) says that money motivates us but it is not necessary that anything that motivates us must make us satisfied and happy.

- **Working Conditions**

  Another factor that influences job satisfaction the most is favourable working environment. Tasnim (2006) mentioned that there are two types of working environment such as (i) Physical environment (ii) Social environment.

  Physical environment consists of physical facilities and incentives where as social environment is concerned with our relationships with others. Luthans (1998) says that if an individual works in a clean friendly environment, he/she will find it easier to come to work.

- **Promotional Opportunities**

  Promotional opportunities have also been of great influence on job satisfaction. Mc Cormick and Ilgen (1985) stated that employees’ satisfaction with promotional opportunities will depend on a number of factors, including the probability that employees will be promoted, as well as the basis and the fairness in promotional opportunities. Goswami (1988) in his study found that some employees were dissatisfied on chances of promotion, recognition and approval. Thus in order to make them satisfied, certain promotion policies and programmes should be framed.
Review

- Supervision

Supervision is considered to be one of the most dominating factors of job satisfaction. There is growing body of literature which suggests two main approaches for the explanation of differences in the nature of supervision and their possible impact. First is a Personality variable i.e. different personality variable of different supervisors which may be responsible for difference in the nature of supervision. The second is Behaviour patterns i.e. difference in the behaviour patterns of the different supervisors which may be responsible for difference in the nature of supervision.

- Relationship with Colleagues and Management Personnel

The relationship with colleagues and management personnel are also one of the major factors of job satisfaction. Crossman and Abou-Zaki (2003) studied that if relationship with co-workers is strong and in positive direction then the satisfaction level of the individuals will also be high. Consistent with this argument Lacy and Sheehan (1997) stated that one of the major predictor of job satisfaction is the relationship of an employee with his/her co-workers.

Subjective well being

Well-being can be conceptualized in terms of physical, mental, social, emotional and spiritual dimensions of a healthy individual that facilitates harmonization of personal experiences (Singh and Gupta, 2001). Subjective well being has been defined in ethical, theological, political and economic and psychological terms (Diener, 2000; Veenhoven, 2002). Thus, subjective well being has many labels including happiness, objective wellbeing, subjective wellbeing, quality of life and life satisfaction.

It in fact is a broad category of phenomenon that includes people’s emotional responses, domain satisfaction, and global judgements of life satisfaction (Deiner et al. 1999). It refers to people’s evaluation of life- evaluations that are both affective and cognitive (Deiner, 2000). An affective component is an individual’s (actual or perceived) hedonic balance (i.e. the balance between the pleasant affect and the unpleasant affect). The cognitive component is an individual’s life satisfaction (i.e. evaluation of one’s life according to subjectively determined standards (Schimmack et
Over the past three decades, psychologists have made considerable progress in research on subjective wellbeing.

Subjective well-being (SWB) is defined as a subjective evaluation of overall life satisfaction and the frequency with which one experiences positive affect (PA) and negative affect (NA) (Diener et al., 1999; Robbins & Kliwer, 2000).

This multidimensional concept is believed to encompass not only material achievements but also other aspects of life, such as love, health, employment, and having children. Subjective well-being refers to a person’s declared well-being and is based on a person’s answer to either a single question or a group of questions about his/her well-being (Rojas, 2003).

Diener (2004), later, bifurcated life satisfaction into:

- Domain satisfaction (work, family, leisure, health, finances, self & one’s group) and
- Global life satisfaction (satisfaction with current life, satisfaction with past, satisfaction with future, significant other’s views of one’s life and desire to change one’s life).

Subjective well being has considerable stability and cross situational consistency. Although immediate emotional reactions of the individual and his appraisals may change in response to ongoing life events, but long term subjective well being is likely to be consistent and stable yet there are reliable individual differences (Diener, 2004).

There are two types of satisfaction, whole or global life satisfaction and life domain satisfaction (Argyle, 2001; Salvatore & Munoz, 2001).

Life domain satisfaction refers to satisfaction within specific areas of an individual’s life such as marriage, education, job, income, etc. Global life satisfaction is a broad concept which includes an individual’s judgment of life as a whole. People rely on domain satisfaction information when they evaluate their whole life events (Schwarz & Strack, 1991).
There are several antecedents of subjective well being, but amongst them temperament’s contribution is considered very significant. Heady and Wearing (1989) proposed that temperament determines individual’s basic level of happiness - the hedonic set point.

Life events can temporarily increase or decrease the level of happiness, but individuals usually return to their basic levels of happiness. Individuals adapt to life events quickly whether negative or positive (Suh et al., 1996). Temperament determines how sensitive an individual is to various life events.

Kagan (1994) hypothesized that biologically based emotional styles - inhibited or uninhibited - channels positive and negative affects. Environmental factors also contribute a lot to individual differences in subjective well being. Research suggests that encouraging authoritative parenting and effective communication among family members and focusing on emotional and instrumental support are all ways to promote subjective well being among youth (Park, 2004).

Subjective well being, being important in itself contributes to a variety of positive outcomes and works as a buffer against a variety of negative outcomes, including psychological disorders. Subjective well being serves not only as a key indicator of positive development but also promotes and maintains mental health.

Subjective wellbeing (SWB) encapsulates issues relating to young people more comprehensively by including young people's perspectives, levels of satisfaction along with social behaviours, mental health and focus on an individual's perspective. Further, given that young people have been constructed as lazy, apathetic, rebellious and other negative judgments (Wyn & White, 1997; Bourke, 2003) and are not well understood (Mathews et al., 2000; Glendinning et al., 2003), analyzing SWB can provide insight into young people's perspectives of their lifestyles, their way of thinking and the outlooks within their cultural context.

According to Neugarten, (1982) a feeling of satisfaction with life is an important factor for a general sense of well-being. The attitude that humans holds about their past, present and future relating to their psychological well-being can be defined as life satisfaction (Chadha & Willigen, 1995). Life satisfaction can also be
called as a consequence gained through comparing someone’s expectations with attainments.

Life satisfaction comprises psychological factors such as goals, values, money, work (Mayer & Diener, 1995; Niederman & Sumner, 2004), marriage (Karney & Bradbury, 1997), education (Lasheras et al., 2001; Witter et al., 1984), age (Herzog & Rodgers, 1981), earnings/income (Easterlin, 1995), living with family (Ozer, 2004), mental health (Decker and Schultz, 1985; Frisch, 1994), job satisfaction (Rice et al., 1980), religion (Levin et al., 2007), and social support (Bhagat, 1983). Some life circumstances such as children leaving home, loss of job, re-marriage, poverty, illness (Van der zee et al., 1996), etc. can have negative effects on life satisfaction of the elderly.

Subjective Well Being allows examination of various integrated issues and problems occurring in the daily lives of individual.

Carr (2004) presented a framework for conceptualizing the various components of Subjective Well Being at two levels. First, the cognitive component, that is, the satisfaction with self, family, peer group, health, finances, work, and leisure. Second, the affective component, that is, the positive affect: happiness, elation, ecstasy, pride, affection, joy, and contentment, and the negative affect: depression, sadness, envy, anger, stress, guilt or shame, and anxiety.

Overall subjective well-being can be understood in terms of life satisfaction, contentment and hedonic level, while different aspects of subjective well-being including self-appraisals like job satisfaction, self-esteem and control belief (Veenhoven, 1991).

According to Veenhoven `the degree to which the overall quality of is judged by an individual and his life-as-a-whole favorable' can be defined as life satisfaction (Veenhoven, 1991). A synonymously used word for life satisfaction is ‘Happiness’. Well-being has been measured by many researchers using various tests and tools (Bowling, 1991; McDowell & Newell, 1996). These scale mostly concern personality disorders, distress and psychological well-being, and deal with areas such as happiness, life satisfaction and morale.

When psychologists measure SWB, they are measuring how individual thinks and feels about his/her life. The three components of SWB, life satisfaction, positive
affect and negative affect, are independent factors that should be measured and studied separately (Andrews & Withey, 1976, Lucas et al., 1996).

Positive affect (PA) can be described as a characteristic that describes how individual experiences positive emotions and interact with others and with their surroundings. Those with high positive affectivity are enthusiastic, energetic, confident, active, and alert. Those who are low on levels of positive affect can be characterized by sadness, lethargy, distress, and un-pleasurable engagement. (Naragon and Watson, 2009)

A personality variable that includes the experiences of negative emotions and low personal-concept is called Negative affect (Watson and Clark, 1984). Anger, contempt, guilt, and fear are various types of negative emotion involved in negative affect and nervousness (Koch et al., 2013). States of calmness and serenity characterizes low negative affect, along with states of confidence, activeness, and enthusiasm.

Thus, the presence of positive affect does not mean the absence of negative affect and vice versa. It is important to note that the tools used to measure SWB correlates and predicts its components also. The 5 item satisfaction with life questionnaire can be used to measure Life satisfaction (Diener, Emmons, Larsen & Griffin, 1985; Pavot & Diener, 1993). PANAS [Positive Affect Negative Affect Schedule] can be used to measure the positive and negative affect (Watson, Clark & Tellegan, 1988).

**Review of Literature**

**Depression**

Elo (1985) conducted a study on 591 merchant navy officers on perceived health, stress and depression in relation to work stressors and personality characteristics. The experienced depression of the merchant navy officers was strongly connected to the personality factors of extroversion- introversion and optimism-pessimism. Depression was the only health indicator connected with age, and the connection was reversed - the younger were more depressed. The type of occupational group was not quite consistent as a predictor of depression.
As depression and suicide have been reported in these workers by numerous studies, psychological well-being of the seafarers is a relevant problem (Cooper, 2000; Roberts and Marlow, 2005). Analysis from 1960 to 2009 on the deaths by seafarers compared to the total deaths of 17,026 indicated that 1,011 seafarers died as a result of a suicide (5.9%). Compared to the deaths of 4,487 seafarers due to illnesses, 590 of them died as a result of a suicide (13.1%) (Iversen 2012).

Seafarers suffer from depression, long time separation from home, and isolation due to cultural, language, gender and racial diversity in the international merchant navy. They also face issues like sexual harassment, bullying, intimidation, fatigue and burn-out (Carter, 2005 and Horck, 2008)

Low (2006) conducted a study on seafarers and found that fatigue, hopelessness, suicide and depression have been the major reasons behind the vanishing of seafarers from sea while they are at work. Extreme exhaustion and fatigue causes overwork, same watch systems, heat and high ambient humidity, dehydration, and work stress leading to vanishing of seafarers from ship. Among the other reasons for the disappearance of the sailors from the ship are suicide, isolation especially when they are troubled by problems at home, depression, monotonous work and life at sea, psychological stress and strain on board, mental terror, mobbing by officers or other crew members, hopelessness, ship motion sickness (Roberts and Hansen, 2002). The sea holds a morbid attraction for individuals with depressive symptoms, as depression gets worse, the risk of committing suicide by jumping overboard also gets higher (Goethe et al.,1984).

According to Lapa (2010), Depression is one of the fundamental factors that contribute to the state of fatigue like human management, vessel and environmental factors. In a study on merchant navy officers, he found that depression and stress hinders the normal psychological functioning of the seafarer. Fatigue has also been perceived as possible factor in maritime accidents.

According to Iversen (2011), separation increases loneliness among seafarers and when coupled with fatigue and stress creates depression a cause of suicide among
seafarers. 18% of the suicidal cases among United Kingdom seafarer’s studied by Roberts et al., (2010) were found to be suffering from depression.

Oldenburg, Baur and Schlaich (2010) found that the seafaring is characterized by several risks like accidents, piracy, stress, depression, suicide etc. long separation from families, isolation, multi-national crew, long working hours and communication problems promote fatigue and isolation. Isolation leads to despair and depression which finally results in suicide (Mayhew, 1999).

Cases of depression among seafarers subsequently released by pirates after a ransom has been paid are common. In a study by Garfinikle (2011) Seamen’s Church Institute in New York City, says that the trauma caused by being on a hijacked ship or taken hostage by the pirates can affect the mental health of the seafarers. They did a post-piracy assessment and trauma.

Kingdom and Smith (2011) while researching on seafarers, stated that the experience of stress, anxiety and depression is largely explained by the relationship between efforts and rewards at work, and that the associated psychosocial risk factors are better predicted when additional aspects of the work environment (such as an individual’s ability to influence decisions, their skill level and how much social support they enjoy) have been accounted for.

Carotenuto, Molino, Fasanaro and Amenta, (2012) reported in their investigation on merchant navy officers found that 58.7% merchant navy officers consider that long separation from family, loneliness on board, multinational lifestyle and relevant factors induce psychological distress. Isolation can lead to despair and depression. In particular situations and invulnerable individuals it, has been reported to be a cause of suicide.

Gregorio (2012) conducted a study on merchant navy officers and it showed that due to boredom, loneliness and other problems, mortality rate is high in them. The lack of social support is the major cause of loneliness and depression. Their working conditions such as isolation, long working hours, occupational hazards and stress increases their vulnerability to work and lifestyle related disease.
Sanchez (2013) stated that seafaring is a stressful occupation, with long working hours and fatigue often posing problems for crew working on the ship. Family problems play a major role in the life of the seafarers. Most of the seafarers were diagnosed to be depressed due to the family issues back home. According to this study mental disorders due to depression can affect seafarers at any point in time on board. (Jezewska et al. 2013)

**Job satisfaction**

Lodde et al., (2008) conducted a study in which they applied the Demand Control Support Model (DC-S model). It was a comparative study to compare the psychosocial working conditions for a sample of French merchant navy officers and ratings to those of a group of non-seafarers (engineers and technicians) employed by the same company and also participating in sea voyages. In their study it was found that the seafarers reported a significantly higher proportion of job strain (low control–high demands) than the non-seafarers.

According to Cockroft (2003) due to less number of crew numbers, high workloads, for low salary, seafaring is less attractive profession. Corkroft points out how crews are bearing the costs of competitive pressures and adds that with these lower costs come the disadvantages of cost cutting, concerns about the long-term future of the industry, fatigue, forged qualifications, accidents due to lack of alert people on the bridge, not enough maintenance and insufficient training, all of this results in job dissatisfaction among seafarers making their profession less attractive for them.

Guo, Liang and Ye (2005) conducted a comparative study on 146 Taiwanese merchant navy officers between both deck department and engine department on job satisfaction, job commitment and the intent to leave the job. It was found that Taiwanese ship officers who worked in deck departments have lower levels of job satisfaction and organizational commitment as compared to those working in engine department, though the coefficients calculated in the results do not reach a significant level but statistical differences exist.
Cahoon and Haugstetter (2008) studied the demographic changes of job applicants and to explain how these changes, when combined with the environmental and social changes occurring onboard, are resulting in job dissatisfaction among merchant navy officers and less interest in a shipping career. Merchant navy officers receive high levels of training which now may not be used, which may result in their skills being lost. Merchant navy officers work in an environment of having high expectations of the ships abilities, isolation and boredom, all a recipe for taking greater risks. Job satisfaction generally decreases as merchant navy officers begin to wonder why they undertook such high levels of training to perform rudimentary work. The eventual result is job dissatisfaction and resignation from the job.

Oldenburg (2009) reported that engine room personnel had a lower stress level than deck and catering staff due to long working days and time pressure or hectic activities. This indicates regular working hours and routine procedures in the engine room, whereas especially the deck personnel have to react to permanently changing job demands (port clearance, district routes and watch-keeping at sea). Correspondingly, these activities were considered to be the most stressful job activities in their study. 49.3% of the deck personnel and only 37.5% of the engine operators claimed to have a higher stress level due to long working days. Time pressure aboard was regarded as more stressful by only one third of the engine personnel, but by half of the deck and catering staff. So the deck officers are found to be low on job satisfaction than the engine officers in majority of the studies.

Sąlyga and Kušleikaitė (2011) found that due to decreased number of crew members, increased workload, social isolation, stress is high among seafarers. The multi-variant analysis in this study revealed that the psycho-emotional strain was related to evaluation of health disorders like waist and spinal pains, insomnia and depression.

Diederichsen (2012) stated that job satisfaction and bottom line costs go hand in hand. Besides the psychological aspects of job satisfaction, he says there are other factors that contribute to a seafarer’s sense of wellbeing. These are acknowledgement and appreciation, social support, the possibility to learn and develop, influence by having their contributions acknowledged, being aware their contributions help a
company succeed, and a good balance between work load, job complexity, and each individual’s competence.

Wang (2012) reported that environmental factors such as weather conditions, port conditions and vessel traffic becomes a problematic issue for ships and seafarers. When in ports stress and fatigue are caused in seafarers due to the additional burden of safety, unpredictable working hours, pressures on shifting and manoeuvring operations and vessel inspections. Restricted visibility, high traffic and tidal windows are other factors which contribute as important factors to seafarer stress.

Nielsen et al., (2013) reported that physical and psychosocial work factors are related to the levels of job satisfaction and intentions to leave the maritime industry. He found that there are many demanding aspects of seafaring such as the inability of employee to leave the work site, extreme weather conditions, long periods away from home, and motion of the work place. Some of these are unchangeable and are a reflection of the nature of the domain, whereas others are possible to modify and adjust.

Slišković and Penezić (2015) also concluded from their study that one of the most common sources of job dissatisfaction among seafarers is their separation from home and family. This source of dissatisfaction is often in first place and second one is unfavourable contracts and irregular shift rotations. Job dissatisfaction with unfavourable working conditions can be classified under the following aspects: long contract, workload and overtime working hours, isolation, wages, low or no availability and price of the Internet, poor quality of food served, less opportunities for social and sports activities on board, and non-compliance with safety standards. Dissatisfaction with the contract is derived from the length of time on ship and from an unfavourable ratio of watch hours. Furthermore, non-compliance with contract regarding staying on ship and at home is also noted. Breach of contract and irregularity of shifts affects leisure time at home, disable rest quality and family and social obligations, and also negatively affect financial planning of the seafarers. One other source of dissatisfaction relates to the workload on board, which is evident in the number of hours over the norm, and is not in accordance with the rules and not adequately paid for working overtime. Isolation is one of the most commonly found stressors in seafarers and, not surprisingly, is here also shown as one of the sources of
discontent. The absence of facilities for social and sports activities also contribute to dissatisfaction. Job dissatisfaction also stems from safety issues, especially where the necessary level of attention is not given to standard of safety, and especially on not adequately maintained older ships. Poor interpersonal relationships among crew members are a common source of dissatisfaction. Relationships with superiors and fear of losing the job because of problematic relations with superiors are also emphasized.

Visvikis and Brooks (2015) conducted a survey on more than 500 merchant navy officers requesting them to respond to a questionnaire, with the aim of collecting information on various work-related issues and on merchant navy officer’s job satisfaction. Results demonstrated that respondents consider the separation from family and the inadequate communication with family and friends while at sea as the most important issues hindering retention in the profession.

Quality of life

Tamura, Kawada and Sasazawa (1997) opined that during a voyage, the environment on the ship is always full of noise and vibrations caused by operations of engines, generators and air conditioners and also exhaust from funnels and rotation of the propeller. Sailors are exposed to a loud, steady noise on a voyage. Sailors may find difficulties recovering from fatigue due to the constant noisy environmental conditions, which may lead to poor daytime performance and, may further lead to accidents at sea.

Working during night shift work system impairs the quality of life of an individual because of the chronic fatigue, sleepiness and somatic symptoms and prevents the requirements of social life (Puca et al., 1996; Selvi et al., 2010). Seafarers work in a shift system including the night hours. Shift workers face many physical and psychological problems because of the disruption of work-rest cycle and routines and being out of the social life (Incir, 1988).

Nielsen (1999) conducted a study on death rates of merchant navy officers from the time period between years 1986-1995 and also reported that seafaring has always been recognised as one of the most dangerous professions. These seafarers are exposed to extreme weather conditions, enclosed spaces, toxic cargoes and loud machinery (Curry, 1996; Buxton and Cuckson, 1997). During the span of 10 years,
123 deaths were reported. The major reasons behind these deaths were maritime accidents 69 (56.1%), death due to illnesses from which majority of them suffered from heart related disease about 21 (17.1%) were cases of unnatural death, 13 (10.6%) due to occupational accidents, 9 (7.3%) missing at sea, 4 (3.3%) were the case of homicides and 4 (3.3%) committed suicides. The majority of accidents and deaths occurred in deck officers as compared to engine officers.

The occupation of merchant navy officers involves a lot of risk of accidents. Deck crew involved in heavy work on deck and have the highest risk of being involved in an accident. Marine engineers also have high number of accidents but these are generally less severe than the accidents of the deck crew. Galley and catering crew have many accidents while preparing food and serving it. In many cases such accidents make them temporarily unfit for handling food, these accidents may also cause permanent disability (Hansen, Nielsen and Frydenberg 2002).

Ellis, Allen and Burke (2003) studied 7 short sea and costal vessels, a total of 177 seafarers wherein participants and were asked to complete a questionnaire and objective performance tests measuring fatigue, sleep quality, reaction time, mood and health with environmental parameters. It was found that counter-directional tour trends might exist where job stress and effort increase over a tour parallel to environmental habituation to factors such as noise. The sleeping patterns, work load and poor health affected the quality of life of the seafarers.

Hansen, Tuchsen and Hannerz (2005) revealed ship engineers are subject to a high number of accidents. Most of open fracture cases occur among engine room crew members. This type of injury occurs more frequently among young and inexperienced seamen than among those with a long period of service at sea. It can be deduced that seamen working on deck, such as part of the auxiliary ship service members, also are at an increased risk of injuries and accidents that affect their physical Quality Of Life. Walking from one place to another aboard the ship causes serious accidents. The most serious accidents also happen on deck.

Malakauskiene (2005) conducted a study which shows that the best Quality Of Life is among the members of commanding group, the worst is among engineer
ship service, auxiliary ship service and deck service members. The commanding group members (captains, etc.) have better environmental and conditions than the rest of crew (for instance, the commanding group members are less exposed to toxic solvents, chemicals, etc.). Engineer ship service members face negative environmental conditions – vibration, noise, toxic solvents whereas auxiliary ship service and deck service members are subject to injuries, musculoskeletal system disorders; they have to work in rainy and windy conditions on deck.

Salyga and Juozulynas (2006) stated that there is an association between environment and psycho-emotional stress experienced by Lithuanian and Latvian seafarers and they found depression occurring more frequently at sea and other factors associated with psycho-emotional stress on ships were disturbed working and regimes, and disturbed regular sexual life.

Juozulynas et al. (2007) studied the physical and psychological dimensions of health-related quality of life among Lithuanian seamen showing that there is a difference in the relation between the physical and psychological dimensions of Health Related Quality Of Life (HRQOL) of Lithuanian seamen depending upon their demographic characteristics. It was found that the worst psychological quality of life was reported among ship auxiliary service seamen (more than 1/10 of them rate their Quality Of Life as very poor) and engineer ship service (almost a half of them rate their Quality Of Life as poor); members of engineer ship service and ship auxiliary service (about 1/10 of each group) say that they do not enjoy their life at all; seamen who are least satisfied with their bodily appearance belong to engineer ship service – 1/5 of them are only a little satisfied with their appearance; 1/5 of respondents belonging to engineer ship service very often have negative feelings (blue mood, despair, anxiety).

Working under stress worsens the quality of life of the employees, their wellbeing, and also negatively affect their health (Parker et al., 1997; IMO 2001). Many other specific factors can also be related to different activities in which seafarers are involved. Fatigue on waking is frequently reported by seafarers. It increases gradually from the beginning of the shift, and is more evident during the first week at sea. A wider perspective on the consequences of fatigue is required as
our knowledge of the impact of it on health shows that it worsens life quality, causes environmental damage, and compromises the health and wellbeing of seafarers (Allen, Wadsworth and Smith, 2008). Semmer (2003) stated that due to stress and sleep related difficulties, problems are caused by individuals, particularly by their incapacity to cope with the work demands, but it is in the interests of the ship owners to provide coping strategies, lowering the stress levels, and improve the quality of life of its workers or seafarers (Carotenuto, Molino, Fasanaro and Amenta, 2012).

Jezewska and Iversen (2012) conducted a study on 164 seafarers and they found that in the maritime industry stress is related to specific physical and psychological conditions of working at sea, high requirements of skill and psychological factors and negative attitudes and behaviour of seafarers. The general quality of life (QOL) of seafarers worsen due to the the negative consequences of stress, the seafarer’s wellbeing, their overall health and the quality of their work all gets affected. The evaluation of their QOL was based on the factors of their physical/ climatic, chemical, biological and psychosocial makeup. Their QOL was evaluated by examining subjectively their experienced work related stress.

Tac, Tavacioglu, Bolat, Osmaan and Bolat (2013) performed physiological and neuropsychological tests on sailors and found that fatigue and other distressing conditions are derived from the loss of cognitive abilities in seafarers.

Peplińska, Jezewska, Leszczynska and Polomski (2014) conducted a study on mariners and found that stress was high among them due to the specific working conditions like risk of health or loss of life, deprivation of a number of essential needs resulting from a long-term separation from beloved, social threats from long stay in a small group on ship, inflexibility in movement and minimization in privacy on ship leads to stressful conditions among sailors that affect their quality of life and well-being. Other factors like swaying, vibrations, noise, climatic and time-zone changes also affect psychological and physical health of the mariners. Due to the long duration of the factors such as storms or frustrating situations resulting from faulty job organisations on ship or port, there’s a sense of permanent emotional stress experienced by the majority of mariners (Leszczyńska,2010).
Stress

Sanquist, Raby, Forsythe and Carvalhais (1997) conducted a study on 141 subjects regarding their sleep duration which is less than 5 hours a day, regarding their work and rest schedules, sleep hours, alertness during work hours and critical fatigue. According to the researchers, condition of sailors degrades when they perform additional and overtime duties during their off-watch hours. Gillberg (1995) in his research on sleep, states that fragmented work and rest scheduling of this type within 24 hours can predominantly contribute to fatigue. The timings of the shift influences the amount of sleep an individual gets, this has been indicated by many studies on traditional shift workers (Akerstedt et al 1982; Tepas and Carvalhais 1990). Episodes of fatigue or decreased alertness during watch hours have been indicated by 38% of the mariners.

There is a contrast between the rhythm of an individual’s biological clocks and seafarer’s working schedule. More pronounced ‘jet lag’ type effects are caused due to the disruption of circadian rhythms because ships get increasingly faster (Malawwethanthri 2003). From the analysis of maritime accidents, it was found that circadian rhythm plays a major role in effecting the alertness levels and performance of seafarers (MAIB 2004). A considerable amount of stress in seafarer results in human error due to intensive paperwork, shift-based timetables and overtime.

The negative effects of noise may be exacerbated by the fact that seafarers live where they work, and they are not only exposed to such levels of noise during work hours but during rest hours also. Noise has been shown to have a negative affect not only on the well-being of an individual, but also on the quality of sleep one gets and this may further lead to an increase in levels of fatigue (Riediker and Koren, 2004).

Salyga (2006) in a national cross-sectional study on seafarers of two different countries, Lithuania and Latvia, reported that factors that are associated with psycho-emotional stress are essentially depression and disorders of sexual life whereas other studies demonstrated an impairment of cognitive abilities (Wadsworth, Allen and Smith, 2008), emotional eating disorders, and compulsive eating/binge eating disorders and night eating disorders also (Jezewska et al., 2009).
Kassar and Suleiman (2014) in their investigation on harmful effects of electromagnetic fields on seafarers found that seafarers were highly exposed to these waves as comparative to landlubbers. From a large number of sources seafarers are exposed to Electro Magnetic Field’s (EMFs) every day. Officers are exposed to a high average field intensity level eight hours per day while controlling the ship. They are exposed to lower average field intensity within the accommodation even during the rest hours between their two successive watches. Due to the expose to such waves not only the physical quality of life and wellbeing are affected but also various psychological problems have been found in seafarers such as depression, tension, psychiatric disorder, malfunctions, irritability and hopelessness.

Acejo, Sampson, Turgo and Wadsworth (2011) conducted a study on the senior and junior ranked merchant navy officers from both deck and engine department and found that senior officers were more stressed as compared to those junior ranked officers. According to them, stress is one of the most challenging aspect of life while working at sea which not only affect the physical health like headache (16.3%), difficulty falling asleep (16%), cough, catarrh or phlegm (13.3%), backache or pains in the back (12.3%), cold or flu but also the wellbeing of the seafarers. 58.2% of seafarers in this survey reported that they had experienced at least one of these conditions in the last two weeks as compared to remaining 41.8%. 75% of seafarers reported life to be mild to moderately stressful while they are working at sea and only 12.8% reported it as extremely stressful. Junior officers scored 14.7% while senior officers reported 18.3% on extremely stressful on perceived levels of stress.

The quality of life of the employees, their wellbeing and also their health can be negatively affected due to working under the stress (Parker et al., 1997; IMO, 2001). Stress risk is higher in very long voyages, especially during the night time (Wadsworth, Allen and Smith, 2006). The global number of hours at work were reported to be very high in a survey “Seafarer fatigue: Wake up to the dangers” (International Transport Federation, 1998). A quarter of the ITF survey sample stated that seafarers worked on average of more than 80 hours in seven days (International Transport Federation, 1998; Allen et al., 2008).
The unique aspect that seafaring symbolizes today in the international industry leads to the enhancement of stress factors among mariners. Currently Stress represents a complex issue because it creates hurdles for mariners form achieving a good sleep and causes the release of energy reducing alertness (Comperatore, 2001). Seafarers are unable to cope with stress due to the various types of environmental demands and threats which are very common aboard ship and initiate the development of stress in them. Consequently, this can result in low levels of work performance and health trouble among seafarers. Features such as noise, vibration, temperature, personal problems and interpersonal relations are the most known contributors to stress onboard ship (IMO, 2001).

Parlak and Yildiram (2005) studied 281 Turkish seafarers found that working conditions onboard affect the wellbeing of seafarers to a great extent. According to them seafaring is one of the most dangerous occupation and working onboard in difficult conditions affect the lifestyle of the workers. They even face threat of unemployment due to the poor market conditions. There is a reduction in wages, due to decrease in manning and fast turnarounds workload has increased which further affects the happiness and living conditions of the seafarers. long working hours, shift pattern and poor work place conditions such as vibration, heat and excessive noise affects their well-being

IMO estimates that 80% of accidents on board cargo ships are caused by human factors. Stress has been found to be a true representative cause of fatal accidents in merchant marine, the risk for stress onboard has been regarded as a the cause of endless list of human tragedies (Maritime Knowledge Centre, 2012).

According to Carotenuto, Molino, Fasanaro and Amenta (2012) seafaring is associated with mental, psychosocial, and physical stressors. Long separation from family and friends, on board loneliness, stress, multi-national crew, limited recreation activity, and deprivation of sleep were important factors. A more detailed analysis in a report on lifestyle and relevant factors inducing mental distress was given by Australian Maritime Safety Authority (AMSA). Stressors affecting merchant navy officers working in the engine room were different from those involving the deck crew.
According to Smith, Wadsworth and Allen (2006), Seafarers have to work on a ship in an enclosed space, away from homes in isolation. The working hours on ship and the separation time from home ranges from 3 months to 6 months with unexpected environmental factors such as different weather conditions. Also there is no distinction between working area and recreational area on ship. The crew is multinational these days living together on same ship for long period of time. As compared to land-based jobs the operational aspects related to merchant navy are far more complicated for reasons such as different types of ships, the model and the length of navigation, the time to return to the port and the time for which ship remains at port. Exposure to a large number of risk factors related to work environment on ship at sea seafarers feel fatigued. All of these aspects are creating the unique potential reasons for fatigue.

The biggest nuisance and stressor as mentioned by seafarers for them is separation from their family and friends. This factor strongly influences the subjective perception of quality of life of a seafarer (Plopa 1996; Peplinska, 2011). They subjectively experience stress that often results in a decrease in the overall psychological wellbeing index of the seafarers, and it may also decrease the subjective assessments of quality of life, affecting the other areas of acting and functioning (Peplinska and Rostowska, 2013; Peplinska et al., 2013; Peplinska et al, 2014). Working under such stressful conditions also have a negative impact on health of the seafarers (Leka, 2004). The most commonly reported health issues include sleeping disorders and eating disorders.

Lipowski, Lipowska, Peplinska and Jezewska (2014) conducted a study on mariners and found that stress was high among them due to the specific working conditions like risk of health or loss of life, deprivation of a number of essential needs resulting from a long-term separation from beloved, social threats from long stay in a small group on ship, inflexibility in movement and minimization in privacy on ship leads to stressful conditions among sailors that affect their quality of life and well-being. Other factors like swaying, vibrations, noise, climatic and time-zone changes also affect psychological and physical health of the mariners. Due to the long duration of the factors such as storms or frustrating situations resulting from faulty job
organisations on ship or port, there is a sense of permanent emotional stress experienced by the majority of mariners (Leszczyńska, 2010).

Bal, Arslan and Tavacioglu (2015) applied Lactate test to measure seafarer’s fatigue and found that there are various factors causing fatigue in them such as sleeping conditions, biological clocks, workload, stress, personal factors, organisational structure, voyage planning, ship’s design, comfort levels on ship. Also factors like bad weather conditions such as storm, rain, fog increases workload on navigational officers. Sea-sickness increases mental and physical fatigue and affects job satisfaction of seafarers. Currents and night time navigational watches also causes marine accidents in narrow channels and shore traffic area (Akten, 2004). Frequent port calls and restless were also found to be the major cause of fatigue which can be dealt with proper distribution of equal work responsibility among all seafarers onboard so they can get some time for rest and sleep.

Thiruvasagam and Rengamani (2015) in a study on Indian seafarers found that due to stressful job activities such as watch-keeping on the bridge, navigation through highly frequented routes, port clearance like loading and unloading, safety techniques and hygiene control measures, port manoeuvres during arrival and departure, administrative tasks, and routine activities during the voyage leads to fatigue in seafarers. Due to time pressure and hectic activities on board, the deck officers stated higher levels of stress. This can be attributed to unexpected situations during the voyage and increased amount of administrative duties which further combines with lack of sleep, chronic fatigue, health problems and safety risks during sail.

Akamangwa (2016) conducted a study on seafarers and stated that due to demanding working conditions at sea and work load, the stress among seafarers is found to be high as compared to other off-shore workers and at shore workers. The dangerous working environment is found to be directly related to the high levels of fatigue and stress among sailors. Senior and junior officers were more found to be stressed as compared to other crew. The well-being and sleep of the sailors is also affected by the high job-demands, long working hours, inadequate rest and inflexibility at work on ship.
Quality of sleep

Sanquist et al. (1997) conducted a study on 141 subjects regarding their sleep duration which is less than 5 hours a day, regarding their work and rest schedules, sleep hours, alertness during work hours and critical fatigue. According to the researchers, condition of sailors degrades when they perform additional and overtime duties during their off-watch hours. Gillberg (1995) in his research on sleep, states that fragmented work and rest scheduling of this type with in 24 hours can predominantly contribute to fatigue. The timings of the shift influences the amount of sleep an individual gets, this has been indicated by many studies on traditional shift workers (Akerstedt et al. 1982; Tepas and Carvalhais 1990). Episodes of fatigue or decreased alertness during watch hours have been indicated by 38% of the mariners.

A survey by Omdal (2003) of 11 Norwegian vessels aimed to identify factors potentially harmful to health and found exposure to noise and indoor climate to be the most common problems identified by seafarers, with 44% of respondents reporting noise as a problem, Omdal suggested higher standards of noise reduction be incorporated into ship design. Such evidence suggested that through technology and improved design traditional hardships associated with the maritime life can be challenged and indeed overcome (Allen, Wadsworth and Smith, 2008)

Similar findings were reported in a study by Lutzhoff et al. (2010) who also reported shorter sleep periods within a 6/6 system, where sleep was more often split into 2 halves. The level of sleepiness was higher on the 00:00-06:00 and 06:00-12:00 watch with increasing sleepiness towards the end of the watch. The sleep duration differed in between various watches with longer sleep during the 06:12:00 and 18:00-24:00 off duty periods (Eriksen et al., 2006).

Carotenuto, Molino, Fasanaro and Amenta (2012) investigated that psychological stress in merchant navy officers and concluded that seafaring is associated with mental, psychological and physical stressors with the most important stressors being separation from family, loneliness on board, fatigue, multi-nationality, limited recreation activity and sleep deprivation. The associated mental health risks
are suggested to be addressed by helping merchant navy officers to lower their stress level and to develop strategies for coping with inevitable stress conditions.

Oldenburg et al. (2013) conducted a survey on emotional exhaustion and sleep related problems among 251 seafarers. Due to the long working hours, shift watch hours and multi nationality on-board, seafarers are more prone to stress and sleep related disorders. In many officers, depersonalization was found due to the lack of healthy sleep. Officers are also under stress due to their high responsibility for the crew and the ship and by permanently changing job demands like port clearance, district routes and watch-keeping at sea.

Bridge and engine officers were studied on 4 on/8 off and 6 on/6 off watch systems. Sleep and sleepiness were objectively assessed by the method of polysomnographic recordings (Leeuwen et al. 2013). The frequency of severe sleepiness was found to be high, indicating several officers actually falling asleep whilst on watch. The total amount of sleep that watch keepers managed to obtain on 6on/ 6 off was less than normally required for full rest. Watch keepers sleep time averaged 6.5 hours in total, split up into two sessions: the main one during the night’ time, followed by a ‘nap’ during the other rest period (Horizon, 2015). Over-time work was shown to have a strong impact on sleepiness. A large number of officers who participated in the study fell asleep during work after a short period of mild overtime work (Leeuwen et al., 2013).

Rotating shift and permanent night work arrangements are known to compromise sleep. Working regular outside the daytime hours is strongly associated with shorter sleep duration, sleepiness, and accident risks. The maritime industry is characterized by working in shifts to keep the vessel moving continuously. Various shifts have been applied, but common to most of them are those shifts that permit less sleep because they divide the day in portions that leave insufficient time for the seafarers to take rest and restitution. Due to continuous exposures such as noise, vibration, moving and rolling/pitching of the ships and other disturbing factors at sea, sleeping may take place under unfavourable circumstances. The quantity and quality of sleep is prone to be disfavoured which can go even worse if being forced to sleep at unfavourable times of the day when working outside the regular daytime hours.
(Ohayon et al., 2010; Jepsen et al., 2015). Compared to shore based workers, in many studies seafarers have reported higher levels of lethargy and poor quality of sleep (Smith, Allen and Wadsworth, 2006).

Eriksen, Gillberg and Vestergrén (2006) in a study found that within a 6 on/6 off watch system, the levels of sleepiness are highest during the night shift from midnight to 6 a.m. and increases towards the end of the shift. The 6/6-watch system is related to higher risk of severe sleepiness for seafarers during the early morning hours compared to 4 on/8 off-watch system with daily 8 working hours. The officers reported shorter sleep duration, more frequently nodding-off on duty and excessive sleepiness. 17.6% of them reported that they have fallen on sleep at least once while on duty during their career. (Harma et al., 2009)

Jepsen, Zhao and Leeuwen (2015) in a study on merchant navy officer’s psychological stress concluded that seafaring is associated with mental, psychological and physical stressors with the most important stressors being separation from family, loneliness on board, fatigue, multi-nationality, limited recreation activity and sleep deprivation. The stressors differed in between strata and departments on board. The social situation and stress at work are strongly linked to disturbed sleep and impaired awakening.

Jepsen (2015) stated that most adults need between 7 and 9 hours of sleep per day, preferably during a single major sleep period at night, this may be difficult to obtain at sea — in particular with work in shifts. Fatigue related to shift work has been studied in merchant navy officers, and clear differences between daytime workers and shift workers, and between various watch systems have been observed. In a case-control study of rotating shift workers and daytime workers, the sleep profile was similar in the two groups, but insomnia was found to be closely related to sleep time, anxiety, depression, fatigue, and impaired quality of life (Vallieres, 2014).

Beşikçi, Tavacıoğlu and Arslan (2016) conducted a study on merchant navy officers found that they work in a shift system (shift-work) including the night hours. Due to the disrupted sleep-wake cycle, they face many physical and mental problems which further impair the quality of life. The stress caused by incomplete sleep leads to many accidents.
A good quality of sleep with enough duration is necessary for psychological wellbeing. Sleep is based on circadian rhythms according to an approximately 24-hour cycle. If this circadian rhythm is impaired it is possible that you will feel sleepy at the time when it is necessary to be awake or you might feel awake at the time you should sleep. A large proportion of seafarers have been complaining about not sleeping well and get continuously interrupted rest (Allen, Wadsworth and Smith, 2007). This phenomenon is similar to the so-called “jet lag”, is mostly experienced by seafarers sailing on ships which rapidly cross several time zones. Merchant navy officers working on transoceanic ships complain of having 2/3 episodes of awakening during sleep (Tirilli, 2004) and they show a circadian predicted dip in alertness in the night time. With an increase of accident risk, a pronounced dip of alertness is also noticeable in the afternoon. A shift system is required in Seafarers’ work, which has a negative impact on circadian rhythms. A number of obstacles are posed to gain sufficient restorative sleep while working on 24-hour shift patterns on a moving vessel. Crew may have to work additional hours, sleep when their bodies feel naturally awake, and face disturbances from vessel activity. (Caretenuto, Molino, Fasanaro and Amenta, 2012).

**Subjective well-being**

In various studies on seafarers working on ships, it has been argued that workers experiencing poor health and well-being in the workplace leading to less productive, make lower quality decisions and are more prone to be absent from work (Danna and Griffin 1999)

Havold (2005) stated that the shipping companies employ people from many different countries, and nearly 50% of the total crew members on a vessel are foreigners, with Filipinos constituting the largest group. The multicultural and multinational aspects of the maritime industry contribute to the differences in the perceptions of safety and well-being across ships (Johnsen et al.2012). Empirical evidence show that vessels with crew members of single nationality or with only 2 nationalities showed more positive attitudes towards safety and risk than those with multinational crews members (Hetherington, Flin and Mearns, 2006). Therefore cultural differences between employees should always be taken into consideration
when investigating work environment, safety, health, and well-being in maritime industry (Nielsen et al., 2013).

The way of life aboard merchant navy ships, such as working schedule are less stringent that those of naval vessels, resulting in a possible neglect of the welfare of merchant seamen. This may lead to decreased job satisfaction and mental and physical wellbeing, thus contributing to the onset of stress which further exacerbates the problem of poor performance of duties. The occupations of seafarer’s as a whole differ a lot from land based workplaces (Kristiansen, 2005).

While working on ship seafarers are parted from their families for long periods, which may create work–family interference as well as family–work interference (Wadsworth, Allen and Smith, 2008). Work-family conflicts have been associated with, reduced job satisfaction, perceived stress, depressive symptoms, perceived health symptoms, and reduced compliance with safety rules (Hammer-Helland et al., 2004; Cullen and Hammer, 2007).

Ellis (2009) argued that factors such as quality of housing (Evans, 2003), noise levels of the ship (Salyga and Juozulynas, 2006), levels of lighting (Kuller, et al., 2006), and colour schemes (Caspari, et al., 2006) may all have effects on health and well-being. Other studies have looked at indirect factors relating to the built environment of the ship and their influence on well-being, such as social networks (Hawe & Shiell, 2000), social support (Evans, 2003) and crowding (Van de Glind, et al., 2007). Similarly there has been research in clinical settings, and the built environment is now increasingly recognised as of relevance to the therapeutic process (Van de Glind, et al., 2007). Factors such as aesthetically pleasing environments (Caspari, et al., 2006) arrangement of furniture (Evans, 2003), windows (Van de Glind, et al., 2007) light (Baglioni and Capalongo, 2002) have shown to influence individual’s well-being.

In a study by Ellis (2009), noise was found to be a major factor that may have an effect on the health and well-being of seafarers. Ships are famous for being noisy places. Not only noise and vibration of the ship but also the continuous rolling and pitching of the vessels is constant problem’ (Salyga and Juozulynas, 2006). Seafarers
not only have to cope with continuous noise from engine and other machinery but they may also face more distracting unpredictable noises, like noise associated with cargo operations, or noise from hand tools in the course of routine shipboard maintenance. The affect of noise on well-being has attracted much attention onshore.

Due to the less availability of free time, stress increases in seafarers. Sports could represent an opportunity to facilitate social interactions, encourage team building, and increase cooperation contributing to the improvement of physical and psychological well-being. Other factors that positively influence the wellbeing are social skills, good self-esteem, problem solving, and the appropriate expression of emotions. Seafarers may improve their social competence and health with sport activities onboard. Therefore a fitness room or some kind of social events can be useful to improve the wellbeing of seafarer’s onboard ship (Oldenburg, Baur and Schlaich, 2010).

Carotenuto et al. (2013) conducted a survey on the Psychological General Well-being of 162 seafarers, including officers and crew from both deck and engine departments. The study covers all aspects of psychological well-being like depression, stress, vitality, self control, positive well-being and anxiety. In the study it was found that there were significant differences between the well-being of officers from deck and engine department. Engine Officers were found to be high on depression and anxiety and low on well-being as comparative to that of officers from deck department. Deck officers were high on self control and general health and low on stress and anxiety. Deck officers scored high on general well-being then the engine officers. 30% of deck officers and 21% of engine officers fall in ‘no stress’ category in this survey.

Hult and Snöberg (2014) studied Swedish merchant navy officers on life satisfaction and work commitment. Life satisfaction has a high correlation with job satisfaction and merchant navy officers were found to be low on life satisfaction due to the working conditions as compared to those who are working on land. They were found to be high on negative affect due to the long term separation and low job satisfaction. The middle rank officers had low positive attitude towards life and job satisfaction.