

The Health and Self-medication Practices of Seafarers*

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Abstract

This paper reports on the findings from a questionnaire administered to active seafarers in 2010/11. The questionnaire was designed to cover a broad range of subjects relating to seafarer health, medication, and self-medication practices. The analysis of the data remains in the early stages and in this account we limit ourselves to an overview of some of the early findings.

Introduction

As with most elements of contemporary life, the world of the seafarer has been dramatically altered as a result of developments in the twentieth and twenty-first centuries. Seafarers have witnessed the introduction of technology on board which has transformed their work and the nature of their communications with shore-based personnel. Ports have altered radically and seafarers rarely go ashore, so quickly do their vessels 'turn around' (Kahveci 1999; Sampson and Wu 2003).

In the course of such transformation, there have been developments which have undoubtedly benefitted seafarers such as the introduction of email (Kahveci 2007) and the mobile phone, allowing seafarers to remain in closer contact with family and friends. However, technological developments have also brought with them some unwelcome changes in the nature of work at sea some of which have been identified as being associated with increased stress and dissatisfaction (Sampson and Wu 2003). In the light of concerns about seafarer health and welfare a number of researchers have written about fatigue, weight problems, occupational accidents, disturbed sleep, stressors, common diseases and alcohol and cigarette consumption amongst seafarers (Allen et al. 2008; Grey 2000; Reyner and Baulk 1998;

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Sampson and Thomas 2003; Smith et al. 2003; Telegraph 2007, 2009; Wadsworth et al. 2006, 2008; Wickramatillake 1998).

However, one of the difficulties associated with any study of seafarer health is that ‘sick’ seafarers are regularly excluded from the working population via the conduct of medical examinations.

In the Philippines (the largest single supplier of seafarers to the modern cargo fleet) such examinations precede every individual contract and may exclude individuals on a variety of grounds including positive test results for HIV, Hepatitis B and C, raised liver enzymes, raised blood pressure, insulin dependent diabetes, and a host of common medical conditions. Seafarers may also find that they fail their medicals as a result of their excess weight or other lifestyle considerations.

A little closer to home, in the UK, seafarers are required to present themselves for a medical fitness evaluation undertaken by an approved doctor every two years. The MCA guidance relating to the medical fitness examination states that:

As a general principle the approved doctor should be satisfied in each case that no disease or defect is present which could either be aggravated by working at sea, or represent an unacceptable health risk to the individual seafarer, other crew members or the safety of the ship.

It continues:

Apart from the purely medical aspects, the occupational circumstances which apply at sea should be fully considered, especially in any borderline case. Particular factors which should be taken into account are:

- a) the potentially hazardous nature of seafaring, which calls for a high standard of health and continuing fitness;
- b) the restricted medical facilities likely to be available on board ship. Few ships carry doctors, medical supplies are limited and there will be delay before full medical treatment is available;

- c) the possible difficulty of providing/replacing required medication. As a rule, a seafarer should not be accepted for service if the loss of a necessary medicine could precipitate the rapid deterioration of a medical condition;
- d) the confined nature of life on board ship and the need to be able to live and work in a closed community;
- e) the limited crew complements which mean that illness of one crew member may place a burden on others or impair the safe and efficient working of the ship;
- f) the potential need for crew members to play a role in an emergency or emergency drill, which may involve strenuous activity in adverse conditions;
- g) since many seafarers will need to join and leave ships by air, they should be free from any condition which precludes air travel or could be seriously affected by it, such as pneumothorax or conditions which predispose to barotrauma (MCA 2011).

Such criteria allow for seafarers suffering from a very broad range of medical conditions (including mental health problems) to be ‘screened out’ of the workplace and as such seafarers typify the phenomenon of the ‘healthy worker’ (Oldenburg et al. 2010; Roberts 2005; Roberts and Jaremin 2010).

In terms of research there are two major implications arising from the stringent application of medical standards to seafarers. Firstly it is extremely difficult for research to identify occupational health issues associated with seafaring as any study of seafarers will not reveal unhealthy seafarers but rather the converse (all sick seafarers having been ‘grounded’). Secondly it is likely that seafarers will be extremely wary of reporting health issues as they will fear the consequences of ‘discovery’. If they reveal a hidden health problem to a researcher and if this is subsequently exposed to their employer they risk repatriation and the end of their prospects for a career at sea.

In undertaking this research, we therefore anticipate that there will be significant under-reporting of medical conditions by seafarers. We also anticipate that seafarers may underplay any lifestyle issues that could compromise their employment status (such as drinking). Furthermore, we expect this population to be relatively healthy, because clinically unwell individuals will not have been allowed on board. Indeed, it has been established that even healthy seafarers may be excluded from the workforce on the grounds that their medical histories (for example the removal of a single kidney leaving a fully functioning healthy

kidney) present a higher *risk* of future illness (Schepers and Dahl 2010). This background should be given due consideration in the interpretation of the data presented throughout.

Methods

To understand the health and self-medication practices of seafarers, questionnaires were distributed to seafarers visiting UK and German ports from a wide range of ship types. Ports visited include Felixstowe, Liverpool, Southampton, Immingham, Bristol and Cardiff in the UK and Hamburg in Germany. Questionnaire distribution was mostly undertaken in seafarers' centres and if it was possible and permitted, some questionnaires were also distributed onboard ships. The questions were in English which for obvious reasons limited the participation of some seafarers from countries where English is not spoken extensively.

The sample

A total of 1,026 seafarers completed a questionnaire. The mean age of respondents was 33.87 years. The youngest was 16 years old and the oldest was 72. The sample was overwhelmingly male. One thousand and four male seafarers and just 22 female seafarers completed a questionnaire. More than half of the respondents were in a couple (603 – 58.8%). Disaggregated into six categories, respondents were either married (553 – 53.9%), single 403 (39.3%), living with partners (50 – 4.9%), separated (10 – 1.0%), divorced (8 – 0.8%) or widowed (2 – 0.2%). The average years spent working at sea was 9.65 years, with one year being the shortest and 46 years the longest time served.

Table 1. Characteristics of the sample

		Frequency (%), SD, MinMax
Total respondents	1026	
Average age	33.9	10.4 (SD), 16-72 MinMax
Sex		
Male	1004	97.9
Female	22	2.1
Status		
In a couple	603	58.8
Not in a couple	423	41.2
Average years at sea	9.65	8.8 (SD), 1-46 MinMax
Vessel types		
Container	605	59
Bulk carrier	125	12.2
Average crew size	20.9	5.7 (SD), 4-44 MinMax
Average deadweight tonnage	46,367	1,000 - 181,000 MinMax

Source: SIRC Study 2011

There were 21 different kinds of ship type identified by participants in the study. However, the majority of the seafarers who took part in the study were working aboard container vessels; (59% - 605) and the second most common ship type was bulk carriers (12.2% - 125). The average crew size aboard the vessels on which participants worked was 20.85. The smallest reported crew was four and the largest was 44. The mean dead weight tonnage (DWT) of the ships aboard which respondents served was 46,367.14 with 1,000 being the minimum and 181,000, the maximum.

The study was conducted over ten months, commencing in July 2010 and ending in April 2011. We visited UK and German ports and were based in seafarers' centres for most of the day, 10:00 am – 9:00 pm, to distribute questionnaires to visiting seafarers. Some 63 nationalities were involved in the study with Filipinos and Indians being the most represented with 182 (17.7%) and 162 (15.8%) participants, respectively (see Table 2 for complete data).

Table 2. Nationality groups

	N	Frequency
Filipino	182	17.7
Indian	162	15.8
Other	181	17.6
Northern, Western and Southern Europeans	127	12.4
Eastern Europeans, and Russians	253	24.7
Others (including Middle Easterns, Africans and Small Islanders)	121	11.8
Tota	1026	100

Source: SIRC Study 2011

There were 49 shipboard jobs (posts) described by respondents. However closer scrutiny reveals that most commonly respondents were able bodied seamen (140 – 13.6%) and ordinary seamen (107 – 10.4%). Overall, ratings made up the largest group of respondents (50.4 %), followed by junior officers (261 – 25.4%), senior officers (221 – 21.5%) and petty officers (27 – 2.6%).

Table 3. Distribution of seafarers by rank

	N	Frequency (%)
Ratings	517	50.4
Petty officers	27	2.6
Junior officers	261	25.4
Senior officers	221	21.5
Total	1026	100

Source: SIRC Study 2011

Findings

Perceived health status

Seafarers were asked to describe their health over the past 12 months. The response categories they were offered were as follows: ‘very good’, ‘good’, ‘fair’, ‘bad’ and ‘very bad’. In the analysis, these were then grouped into three categories: ‘good’ (both very good and good); ‘fair’, and ‘poor’ (both bad and very bad). As anticipated very few seafarers stated that their health had been poor over the previous twelve months. Just fourteen participants (1.4%)

reported poor health with the vast majority of respondents stating that their health had been ‘good’ (87%). One seafarer reported that he had been unable to work for 180 days due to sickness/injury in the last 12 months (due to a fall he sustained while working onboard), another one reported 120 days of being unable to work. In total there were 25 seafarers who reported more than 10 days when they were unable to work in the last twelve months. On average, seafarers had 2.79 days of sickness whilst on leave and 2.20 days whilst onboard.

Table 4. Perceived health status

	N	Frequency (%)
Good	893	87.5
Fair	114	11.2
Poor	14	1.4
Total	1021	100

Source: SIRC Study 2011

Perceived levels of stress

In terms of perceived stress, we asked seafarers to describe how stressful they found life on board and ashore separately. We offered them five response categories to choose from as follows: ‘not at all stressful’; ‘mildly stressful’; ‘moderately stressful’; ‘very stressful’; ‘extremely stressful’. A marked difference was identified between the stress levels of respondents whilst on leave and whilst at work. Less than half of the sample described their life at home as ‘not stressful’ (44.7%) while more than half (51.2%) described their life at home as ‘mild/moderately stressful’. Only a few reported that life at home was ‘very/extremely stressful’ (4.1%). In contrast, the vast majority of respondents described life *at sea* as ‘mild/moderately stressful’ (75%) or ‘very/extremely stressful’ (12.8%). Obviously, there will be cultural factors at play here in terms of both definitions of ‘stress’ and the willingness to ‘own up’ to being stressed. Compared with the Bristol and Cardiff study data, however, seafarers described less extreme stress at work than the land-based sample (12.8% vs 20%) (see Table 5) although levels of high stress (described as ‘very’ and ‘extremely’ stressful) amongst senior officers were closest to the average for the land-based sample standing at 18.3% (see Table 6).

Table 5. Perceived levels of stress (share to total)

	General stress (on leave)	Bristol and Cardiff Study
Not stressful	45	19
Mild/moderately stressful	51	75
Very/extremely stressful	4	6
	Work stress (onboard)	
Not stressful	12	9
Mild/moderately stressful	75	71
Very/extremely stressful	13	20

Source: SIRC Study 2011

Table 6. Perceived levels of stress by rank (share to total)

	Not at all stressful	Mild/moderately stressful	Very/extremely stressful	Total
Ratings	12.1	78.1	9.8	100
Petty officers	14.8	77.8	7.4	100
Junior officers	12.0	73.4	14.7	100
Senior officers	12.3	69.4	18.3	100

Source: SIRC Study 2011

In the study, senior officers reported the highest levels of stress compared to petty officers, junior officers and ratings. We might speculate that such stress is likely to relate to fears of criminalisation, pressures associated with regular inspection, threats of piracy, and changes in the nature of the work of senior officers which has become more paper-based and perceived to be less about ‘seamanship’ (Sampson and Wu 2003).

Alcohol consumption

In terms of alcohol consumption, the reported levels are not high when compared with land-based consumption amongst British male workers for whom an average weekly consumption of 17.54 units has been reported (Smith et al. 2000; Smith et al. 2004a; 2004b), or indeed fishermen in Andalusia who are reported to consume an average of 16.6 units per week (Novalbos et al. 2008). Furthermore, average levels of consumption (1.61 units of alcohol per week on board, 1.92 per week in port and 4.97 units whilst on leave) were well below the medical guidelines for maximum ‘safe’ amounts.

Table 7. Alcohol consumption (in units per week)

	Mean units of alcohol per week	SD, MinMax
Cardiff-Bristol Study	17.54	
SIRC Study		
Onboard	1.61	3.2 (SD), 0-30 MinMax
In port	1.91	3.4 (SD), 0-40 MinMax
On leave	4.97	9.7 (SD), 0-120 MinMax

Source: SIRC Study 2011

A change in the overall culture at sea has been noted by some authors who suggest that there has been “a reduction over time in the culture of heavy alcohol consumption amongst seafarers” (Roberts 2005, p. 41). They further argue that the introduction of ‘dry [alcohol free] ships’ has played a part in this cultural ‘shift’ (Roberts 2005). Our data would suggest that this is only partially correct, however, as 8.2% of the seafarers reported drinking once a week or more whilst actually on board ‘dry ships’.

Table 8. Frequency of alcohol consumption in dry and non-dry ships

	N	Less than once a week	Once a week or more
Dry ship	550	91.8	8.2
Non-dry ship	464	54.5	45.5

Source: SIRC Study 2011

Further to this, we found that average weekly consumption levels on board were almost five times greater aboard non-dry ships than aboard dry ships (2.60 for non-dry vessels as compared with 0.65 units per week on board dry vessels). As shown in Table 9, these differences were less notable for consumption during port stays (in port average consumption of 1.78 aboard dry ships compared with 2.07 aboard non-dry ships), and patterns of alcohol consumption whilst ‘on leave’ were reversed. Those who sailed aboard dry ships reported a higher average consumption on leave (5.48 units per week) than those aboard non-dry ships (4.41 units per week).

Table 9. Average alcohol consumption in units per week

	Onboard	In port	On leave
Dry ship	0.65	1.78	5.48
Non-dry ship	2.6	2.07	4.41
Total	1.61	1.92	4.97

Source: SIRC Study 2011

When we interrogated the data a little more closely, however, a slightly different picture emerged. We considered the average weekly alcohol consumption of the seafarers who stated that they drank once a week or more on both dry (alcohol free) and non-dry ships (n=41 and n=173 respectively). Aboard alcohol free (dry) ships we found that those drinking once a week or more reported an average consumption of 2.37 units per week. This contrasted with an average consumption of 3.52 units per week on non-dry ships (see Table 10). Thus when we consider the difference between the more regular drinkers aboard alcohol free and non-dry ships instead of a five-fold difference we find that, on average, seafarers aboard non-dry ships drink less than double the amount that more regular drinkers aboard alcohol free ships consume. In due course (in future publications) we will look further into these consumption levels more fully to consider their implications.

Table 10. Average alcohol consumption between non-regular and regular drinkers

	Less than once a week	Once a week or more
Dry ship	0.42	2.37
Non-dry ship	1.61	3.52

Source: SIRC Study 2011

In relation to alcohol consumption, nationality, socio-cultural norms and religious values play a part which is not insignificant. When the results for alcohol consumption are considered in relation to nationality we find that seafarers from northern and western Europe top the 'consumption league' with 2.02 units per week when onboard, 2.96 units when in port and 9.68 units when on leave.

Table 11. Average alcohol consumption per nationality grouping

	%	On board	In port	On leave
Filipinos	18	1.88	1.77	3.16
Indians	16	1.44	1.55	3.73
Other Asians	18	1.46	1.5	3.24
Northern, Western and Southern Europeans	12	2.02	2.96	9.68
Eastern Europeans, Baltic and Russians	25	1.47	1.72	4.78
Others (including Middle Easterns, Africans and Small Islanders)	12	1.51	2.37	6.12
Total	1026			

Source: SIRC Study 2011

By contrast, Filipinos, the single largest block of respondents in this study, had an average consumption when *on leave* of just 3.16 units per week. Amongst Europeans, British seafarers have the highest mean alcohol consumption amounting to 22 units per week (higher than the most comparable land-based data we have access to) which may help to explain why the UK's Institute of Alcohol Studies 2008 survey shows that between 2001 and 2005 seafarers had the second highest alcohol-related mortality rate in the UK (after bar staff). In relation to alcohol consumption the variations by nationality are so considerable that comparisons with land-based populations are best made within single nationality groups (British seafarers being compared with comparable land-based British workers for example). Our limited capacity for single nationality comparisons (limited only to British respondents) would appear to suggest that alcohol consumption amongst seafarers may be higher than amongst comparable land-based populations of workers. However there are insufficient data to be conclusive in relation to this point.

Smoking

Just over a third of the seafarers (34.5%) who took part in the study smoked. This compares with 44% of seafarers reported to be smokers in a recent French study (Fort et al. 2009) but is higher than rates reported for the UK land-based population (24%) in recent studies in Cardiff and Bristol (Smith et al. 2000; Smith et al. 2004a, 2004b).

Table 12. Percentage of smokers

	N	Frequency (%)	Cigarettes per day
Non-Smokers	667	65	
Smokers	352	35	13.55 (average), 1-60 Min/Max Standard Deviation 12.03
Total	1019		

Source: SIRC Study 2011

Amongst smokers in our sample, an average of 11.43 manufactured (i.e. not hand-rolled) cigarettes were consumed per day. When manufactured and hand-rolled cigarettes were considered in combination we found an average consumption of 13.55 cigarettes per day. It was notable however that seafarers' cigarette consumption was reported to increase whilst they were on board ship. Fifty-eight per cent of seafarers reported that they smoked more at sea than when they were on vacation.

Table 13. Comparison of smoking habits

	N	Relative frequency
More cigarettes at sea	200	58.1
More cigarettes on leave	40	11.6
About the same amount for both periods	104	30.2
Total	344	100

Source: SIRC Study 2011

As with alcohol consumption there are once again considerable variations across different nationality groups. Europeans consume more cigarettes than any other group of seafarers: In the study, an average consumption of 22 cigarettes per day was reported by western and eastern European seafarers. Filipinos and "other Asians" smoked an average of less than half of this amount, averaging a consumption of seven and eight cigarettes per day, respectively.

The combined reported consumption of alcohol and cigarettes could have implications for the development of some forms of cardiovascular disease amongst seafarers and pose "unequivocal risk factors for ischemic stroke" (Mukamal 2006, p. 201). It is also claimed that the frequency of hearing loss in smokers is higher than for non-smokers (Mohammadi et al.

2009, p. 452). Thus the implications of both smoking and drinking behaviours can be serious and these issues require further future attention.

Symptoms

As well as finding out about alcohol and cigarette consumption we also asked seafarers whether they had been diagnosed as suffering from a number of specified chronic conditions in the last 12 months (see Table 14 for the list of chronic conditions).

Table 14. List of chronic conditions

Chronic conditions
Angina
High cholesterol level
Diabetes
Stroke
Heart attack
High blood pressure
Nervous trouble or depression
Asthma
Emphysema
Bronchitis
Cancer

Source: SIRC Study 2011

Almost a quarter of respondents (22.7%) indicated that they had been diagnosed with at least one of these. High blood pressure appeared to be the most prevalent condition (9.2%) followed by high cholesterol (8.8%). In most cases, and as anticipated due to the aforementioned ‘healthy worker effect’, seafarers compared well with land-based populations of similar workers in relation to most of the specified conditions. This seems to suggest that in many cases seafarers with diagnosed chronic health problems are successfully excluded from the workforce.

Table 15. Diagnosed chronic conditions

	N	Frequency (%)
None	792	77.3
One or more	233	22.7
Total	1025	100
Most prevalent chronic conditions:		
High blood pressure	94	9.2
High cholesterol level	90	8.8

Source: SIRC Study 2011

We further asked seafarers to indicate, from of a list of specified health problems, which they had suffered from in the last 12 months* (see Table 16 for a complete list).

Table 16. List of recurring conditions

Recurring conditions
Bronchitis
Arthritis or rheumatism
Sciatica, lumbago or recurring backache
Persistent skin trouble
Asthma
Hay fever
Recurring stomach trouble or indigestion
Being constipated all or most of the time
Piles
Persistent foot trouble
Trouble with varicose veins
Nervous trouble or persistent depression
Persistent trouble with your gums or mouth

Source: SIRC Study 2011

The majority of seafarers (66.8%) reported that they had not experienced any of these problems in the past 12 months. The remaining 340 respondents (33.3%) reported that they had suffered from at least one condition. Of these conditions, indigestion or stomach trouble was the most prevalent (10.1%), followed by persistent skin trouble (6.5%), arthritis or rheumatism (5.9%) and recurring backache (5.9%). In relation to common recurrent health problems which may or may not have been diagnosed by a physician, seafarers suffer disproportionately from indigestion and stomach ‘trouble’. That is to say that although far

* This was regardless of whether or not a medical diagnosis was made.

fewer seafarers reported many conditions than comparable UK land-based populations in general, when it came to stomach problems they compared closely with land-based workers. Thus, the reported intake of indigestion medication for seafarers at sea in our study was 5.9% while with male land-based workers in the Cardiff-Bristol study, reported intake was 6%. This is not a new phenomenon and problems with the digestive system have previously been shown to be a major cause of morbidity and mortality amongst seafarers (Roberts 2005). It is only possible to speculate about why this might be the case. However links with diet, lifestyle, stress, and the characteristics of the work might sensibly be given consideration in due course.

Table 17. Recurring illnesses (diagnosed or not)

	N	Frequency
None	684	66.8
One or more	340	33.3
Total	1024	
Most prevalent recurring		
Indigestion or stomach trouble	104	10.1
Persistent skin trouble	67	6.5
Arthritis or rheumatism	61	5.9
Sciatica, lumbago or recurring headache	61	5.9

Source: SIRC Study 2011

Having asked seafarers about their symptoms in the previous 12 months, we then focused upon health problems they had experienced in the preceding 14 days. Seafarers indicated that in the last two weeks they had experienced a variety of ailments including: headache (16.3%); difficulty sleeping (16%); a cough, catarrh or phlegm (13.3%) and backache (12.3%). More than half of seafarers, 58.2%, reported that they had experienced at least one of these conditions in the last 14 days while the remainder, 41.8%, said they had not suffered from any of them at all. Again seafarers exhibit what is apparently robust health when compared with male land-based workers in the UK (Smith et al. 2000; Smith et al. 2004a, 2004b); notwithstanding this finding, it appeared that seafarers, like their land-based peers, were commonly making use of self-selected and administered medications of either a homeopathic nature or relating to non-traditional western medications.

Table 18. Recent medical conditions

	N	Frequency (%)
None	429	41.8
One or more	597	58.2
Total	1026	
Most prevalent recent medical conditions:		
Headache	167	16.3
Difficulty sleeping	164	16
A cough, catarrh or phlegm	136	13.3
Backache or pains in the back	126	12.3
A cold or flu	113	11

Source: SIRC Study 2011

Medication and Self-medication

Self-medication was prevalent amongst seafarers, with 63% (650) of respondents claiming to have taken at least one non-prescribed medicine or herbal remedy at sea in the last 12 months. The same thing could be said when they were on leave, with 58.8% (603) claiming to have taken self-medication. The most common self-medication drugs taken when at sea were vitamins or supplements (53.2%) and painkillers (26.3%).

The high intake of self-prescribed painkillers amongst seafarers could result in health complications. As Wazaify et al observe, “increasing availability of non-prescription medicines may encourage patients to believe that there is a drug treatment for every ailment. Furthermore, the use of such products may delay/mask the diagnosis of serious illness” (2005, p. 170). While the high level of vitamin consumption amongst seafarers, (53.2%, compared to the general population figure of 29%, Smith et al. 2004a, 2004b), could be read as a sign of their commitment to their wellbeing, as an attempt to manage their health as consumers (Stasio et al. 2008; Nichter and Thompson 2006), or as their way of undergoing a process of ‘responsibilization’ in terms of their health and safety (Gray 2009), it might also reflect seafarer concerns about the essentially unhealthy diet and lifestyle at sea. Thus these findings warrant further consideration.

At sea and on leave, the most frequently prescribed medications were pain killers (12.9% at sea, 9.3% on leave), followed by blood pressure tablets (5.9% at sea, 6.3% on leave),

respectively. The fact that the consumption of prescribed pain killers increases aboard vessels may relate to the physical nature of many shipboard jobs. Similarly we might speculate that the increase in the intake of blood pressure tablets ashore, on leave, might indicate that seafarers do not have access to regular blood pressure medication at sea and/or are hiding the need for medication whilst at work.

Table 19. Self-medication at sea and on leave

	AT SEA		ON LEAVE	
	N	Share to total (%)	N	Share to total (%)
None	375	36.6	422	41.2
One or more	650	63.5	603	58.8
Total	1025		1025	
Common drugs at sea:				
	Vitamins or supplements (53%)			
	Painkillers (26%)			

Source: SIRC Study 2011

Conclusion

Life and work at sea is potentially more difficult and challenging than life and work ashore. Nevertheless, when seafarers struggle with the workplace environment, either physically or emotionally, they are likely to be excluded (or they may self-exclude) from the workforce. In the course of this research, seafarers, as expected, generally reported that they were in good health, though areas of concern relate to the incidence of high blood pressure, stomach problems, and high cholesterol amongst seafarers. Stress, may be one the most challenging aspects of life and work at sea, particularly for senior officers. Such stress does not just have the potential to affect the health and wellbeing of seafarers, it also directly bears upon their productivity and hence, economic output in general. Stress levels amongst land-based workers are also considerable and in the UK, where long hours are often worked, they would seem to be even higher than for seafarers as a general occupational group. It will be necessary, in the future, to clarify the position vis a vis comparisons between worker groups of the same nationality (i.e. land-based and sea-based). However, we note that, in recent years, the overall cost of stress at work has been estimated to be in the range of 20 billion Euros in the European Union, and more than 150 billion dollars in the US, mainly for health care and treatment costs, absenteeism, and turnover (Lazuras 2009, p. 1075). This should be a

compelling economic incentive for ship operators and manning agencies to look for ways of mitigating the stress levels of seafarers.

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