

The Mental Health of Seafarers

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ABSTRACT

Background: The objectives of this paper are to review published and unpublished information on the mental health of seafarers in order to 1) provide a window on the current status of seafarers' mental health; 2) establish whether the mental health of seafarers in many cases continues to be very poor; 3) describe two current projects to improve the mental health of seafarers; and 4) suggest an industry-wide effort to improve the mental health of seafarers.

Materials and methods: A review of recent literature on the mental health of seafarers was made, and published statistics covering the years 1960–2009 were obtained. In describing seafarers' mental health the use of rates to cite trends in suicides by seafarers was not employed. Statistics on seafarer deaths are given by two methods as percentages of deaths by suicide by seafarers. One compares deaths by suicide to total deaths and the second compares deaths by suicide to deaths due to illness. It is felt these methods are more readily understood by non-scientists who may be in policy-making roles in business or government. A detailed description covers two current projects to improve the mental health of seafarers.

Results: The causes of depression by seafarers are described. Statistics from 1960–2009 on the deaths by seafarers compared to total deaths of 17,026 show 1,011 seafarers died as a result of suicide (5.9%). Compared to deaths of 4,487 seafarers due to illness, 590 seafarers died as a result of suicide (13.1%). These percentages would be higher if 50% of deaths due to seafarers disappearing at sea were included. Based on industry data, in 2012 the daily expected costs to operate a 3,000–4,000 TEU container ship are US\$7,825, and US\$10,944 for a 10,000 TEU container ship – not including the cost of fuel oil. In 2011 a master who disappeared in waters off Australia may have cost the ship owner US\$50,000–US\$100,000 due to the voyage being diverted and delayed. Two projects to improve the mental health of seafarers, one by the Rotary Club of Melbourne South and another by the International Committee on Seafarers' Welfare, are described. It is estimated that by the end of 2012 about 3,500–4,000 ships in 17 major Australian ports will have received booklets and leaflets for masters and crew members on the sole topic of depression from the Rotary Club of Melbourne South's project The Mental Health of Seafarers.

Recommendation for further action: A suggestion is made for a shipping industry project that could result in all merchant ships worldwide receiving mental health information based on the material produced by both the Rotary Club of Melbourne South and the International Committee on Seafarers' Welfare.

Conclusions: The data on suicides proves that the mental health of seafarers in many cases continues to be very poor and often fatal. With deaths aboard merchant ships resulting from depression leading to suicide being widely reported, the damage to the seafarers, their families, and ship owners cannot be ignored. It strongly demonstrates the need for everybody connected with the international maritime shipping industry to do something about it. The mental health of seafarers and the economic health of the shipping industry will be improved as a result.

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Key words: Seafarers mental health, economics of seafarer deaths

INTRODUCTION

It is often said that seafaring is a dangerous occupation. Nowhere has this been better expressed than by the International Maritime Health Association when it says "It has been established that seafaring is one of the most physically demanding professions in one of the most dangerous work environments: the sea." [1]. Numerous studies and reports on the physical and mental health of seafarers, on their illnesses and causes of death, attest to this statement [2–16].

Seafarers spend months, maybe years, away from home; they get lonely; they work many hours straight through without enough sleep; they face stress and fatigue, lack of shore leave; they face short ship-turnaround times, criminalization, harassment and bullying, and dangers from piracy. These can lead to anxiety and depression and in some cases to suicide. Depression and suicide have devastating consequences, not only for seafarers' families but also for shipmates and the companies that employ them. The objectives of this paper are to review published and un-published information on the mental health and welfare of seafarers in order to 1) provide a window into the current status of the mental health of seafarers, 2) establish whether the mental health of seafarers in many cases continues to be very poor and often fatal; 3) describe two current projects to improve the mental health of seafarers; and 4) suggest an industry-wide effort to improve the mental health of seafarers.

SEAFARERS' RIGHTS TO MENTAL HEALTH CARE

Stevenson [17] states "Neither traditional maritime law or the ILO Maritime Labour Convention 2006 specifically addresses mental health care, but court decisions in the past fifty years make it very clear that a seafarers' right to free medical care includes a right to free mental health care. A greater obstacle to seafarers seeking mental health care is the stigma of receiving the care. Seafarers may fear being labelled as a person with a mental illness and all of its associated stereotypes... Seeking mental care can also have consequences for a seafarers' social acceptance and self-esteem".

MATERIALS AND METHODS

Data and information on the illnesses and causes of death of seafarers was taken from published reports, usually those carried out by social scientists studying the health and welfare of seafarers. Information on the causes of depression and suicide was also obtained from the so-called "grey" literature on the health and welfare of seafarers and anecdotal reports from individuals closely aligned with seafarers and their needs (e.g. chaplains in seafarers' centres). Information on

the economics of operating large containerships was provided by Drewry Maritime Research, London. Information on the mental health of seafarers, which resulted in a business plan for a project initiated by the Rotary Club of Melbourne South, was obtained by the author from interviews and consultation with members of the Melbourne Port Welfare Association and others in the international shipping industry. Other reports were obtained by searching the Internet for papers on the topics *mental health of seafarers, depression among seafarers, suicides among seafarers, stress and fatigue among seafarers, criminalization, and piracy*.

Two tables describe the percentage of seafarer deaths by suicide. Table 1 shows percentages of seafarer deaths by suicide compared to all deaths. Table 2 also shows percentages of seafarer deaths by suicide *but* compared to non-traumatic deaths (i.e. deaths from illnesses such as cancer, heart attack, and stroke and not from accidents). It is the opinion of the author that showing percentages compared to non-traumatic deaths is a realistic approach in presenting and analysing data. This method results in percentages of deaths by suicide being considerably higher than percentages of suicide deaths compared to all deaths. Reporting "rates" of seafarer deaths by suicide per population at risk is usually done, but may not be readily understood by non-researchers who are in policy-making situations.

CONCEPTUAL BASIS OF ANALYSIS

It is important to note this paper does not report data based on rates of seafarer suicides/100,000 seafarer years ("Suicide rates are calculated by dividing the number of suicides among a group by the population of the group and multiplying the result by 100,000. This produces the number of suicides per each unit of 100,000 for the group. The "crude" rates of suicide can be compared directly to other crude rates" [19].), although many studies cited used rates to study trends in suicides. This paper presents deaths by suicide as percentages of all deaths by seafarers, without a comparison (except in two cases) with percentages of suicides among general populations. Rates analysis is often used in reporting seafarer deaths (see, for example [4]). A paper by Stack [18] titled "Occupation and Suicide" reports "It is not clear, for example, if persons in alleged "high-risk" occupations have high suicide risk because of occupational stress associated with the occupation or because of the demographic composition of the people in the occupation. The results underscore the need for demographic controls in the assessment of occupational risk of suicide." Stack indicates such an analysis would require the use of multivariate models. An attempt was made to

Table 1. Percentage of seafarer deaths by suicide compared with total deaths

Reference	Date of reference	Nationality of seafarers & years studied	Total deaths	Suicides	Suicides (%)	Missing at Sea ^a
Borsch et al. [2]	2012	Danish Fleet 1986-2009	356	39	11.0	-
Roberts et al. [4]	2010	UK Fleet 1976-2005	1,515	57	3.8	90
Roberts & Williams [47]	2007	UK Fleet 1986-2005	369	16	4.3	19
Roberts [48]	2006	Isle of Man Fleet 1988-2005	65	2	3.1	5
Szymanska et al. [10]	2006	Polish Fleet 1969-1999	324	33	10.2	-
Roberts & Marlow [12]	2006	UK RFA ^b Fleet 1976-2005	60	6	10.0	2
Jaremin [11]	2005	Polish Fleet 1960-1999	324	34	10.5	32
Roberts & Marlow [25]	2005	UK Fleet 1976-2002	835	55	6.6	87
Roberts [49]	2003	UK Seafarers in FOC ^c & UK Fleets 1976-1995	1,264	43	3.4	75
Li & Zhang [26]	2002	UK Fleet 1962-1998	5,389	348	6.5	-
Roberts [27]	2000	UK Fleet 1986-1995	324	10	3.1	20
Nielsen [50]	1999	Hong Kong Fleet 1986-1995	123	4	3.3	9
Nielsen & Roberts [28]	1999	World-wide 1990-1994	2,207 per year ^d	91 per year ^e	4.1	74 per year
Roberts [51]	1998	UK, Singapore & Hong Kong Fleets 1981-1995	1,117	50	4.5	66
Hansen & Jensen [14]	1998	Danish Female Seafarers 1986-1993	39	7	18.0	-
Jaremin et al. [52]	1996	Polish Fleet 1985-1994	109	4	3.7	4
Hansen [15]	1996	Danish Fleet 1986-1993	106	12	11.3	-
Hansen & Pedersen [30]	1996	Danish Fleet 1986-1993	774	81	10.5	-
Brandt et al. [16]	1994	Danish Fleet 1970-1985	1,503	101	6.7	-
Larsson & Lindquist [53]	1992	Swedish Fleet 1984-1988	223	18	8.1	-
Totals			17,026	1,011	5.9	

^aNot included in total deaths; ^bUnited Kingdom Royal Fleet Auxiliary; ^cflag of convenience; ^dincludes a few homicides and unexplained deaths; ^eestimated on a world-wide basis

Table 2. Percentage of seafarer deaths by suicide compared with deaths due to illness. References are only those listing deaths due to illness

Reference	Date of reference	Nationality of seafarer	Deaths due to illness	Suicides	Suicides (%)
Borsch et al. [2]	2012	Danish Fleet 1986–2009	142	39	27.5
Roberts & Williams [47]	2007	UK Fleet 1986–2005	166	16	9.6
Roberts & Marlow [12]	2006	UK RFA Fleet 1976–2005	30	6	20.0
Roberts [48]	2006	Isle of Man Fleet 1988–2005	20	2	10.0
Jaremin [11]	2005	Polish Fleet 1960–1999	86	34	39.6
Roberts [49]	2003	UK Seafarers in FOC & UK Fleets 1976–1995	507	43	8.5
Li & Zhang [26]	2002	UK Fleet 1962–1998	2,640	348	13.2
Couper [54]	2000	World-wide Fleets	521	91	17.5
Nielsen [50]	1999	Hong Kong Fleet 1986–1995	21	4	19.0
Hansen & Jensen [14]	1998	Danish Female Seafarers 1986–1993	29	7	24.1
Jaremin et al. [52]	1996	Polish Fleet 1985–1994	44	4	9.1
Hansen [15]	1996	Danish Fleet 1986–1993	53	12	22.6
Larsson & Lindquist [53]	1992	Swedish Fleet 1984–1988	314	18	5.7
Totals			4,487	590	13.1

describe a cohort of workers on shore with similar occupations to those of seafarers without success. It is possible that such cohorts can be described, and the author urges other social scientists reporting on seafarers' welfare to develop such a data base.

REVIEW OF RECENT LITERATURE

Borsch et al. [2] studied deaths among Danish seafarers from 1986–2009 and reported 36 suicides (11%) out of a total of 356 deaths. The rate of suicides dropped from 14.4 in 1986–1993 to 7.8 in 2002–2009, which is attributed to preventative interventions relating to vessel safety, work environment, improved medical care on board, and to technological and organizational changes in the Danish fleet. Roberts et al. [3] reported on 12 different shipping factors that caused fatalities in UK merchant shipping, UK second register, and foreign flags

used by UK shipping companies from 1970–2005. Roberts et al. [4] studying the United Kingdom fleet from 1976–2005, found there were 57 suicides among 1,515 total deaths (3.8%) and 90 seafarers who went missing at sea (many social scientists studying the deaths of seafarers believe that about 50% of seafarers who disappear at sea are suicide victims). Wadsworth et al. [8] reported that seafarer fatigue may be linked to longer-term individual ill-health and can only be addressed by considering how multiple factors combine to contribute to fatigue. Leszczyńska et al. [20] said stress among seafarers is related to three factors (triangulation): perception and feeling, direct consequences, and state of health. Allen et al. [21] reported that fatigue has been noticeably under-researched in the maritime domain compared to other transport sectors. Smith et al. [22] recommend the following for addressing seafarers' fatigue: review

how working hours are recorded; fatigue management training and information campaigns; establish an industry standard measure of fatigue; and develop a multi-factor auditing tool. Smith [23] says that “Fatigue is strongly linked to mental health problems which are clearly risk factors for more chronic disease and early death (e.g. suicide).” Allen et al. [21] say that seafarer fatigue is a serious health and safety issue and call for more “robust” regulations as current legislation on fatigue has not had the desired effect. Smith et al. [24] say the potential for fatigue at sea is high due to a range of factors, many unique to the marine environment. Szymanska et al. [10], studying suicides among Polish seamen from 1969–1999, found that out of 324 total deaths there were 33 suicides – 10.2% of seafarer deaths, which was significantly higher than the incidence of suicides among the male Polish population over 20 years of age. They noted that the possibilities of predicting and preventing suicides during periodic health examinations are limited. Salyga and Juozulynas [9], studying the association between environment and psycho-emotional stress experienced by Lithuanian and Latvian seafarers, found the following factors associated with psycho-emotional stress on ships: depression occurring more frequently at sea, disturbed working and resting regimens, and disturbed regular sexual life. Jaremin [11], studying deaths of Polish merchant seamen from 1960–1999, reported 34 suicides out of 324 deaths, or 10.5% of deaths. Roberts & Marlow [25] studied traumatic work-related deaths in British merchant shipping from 1976–2002 and found there was no reduction in the suicide rate from 1976 to 1995 in comparison to that in most high-risk occupations in Britain, but a decline after 1995. They recommended improvements in care for seafarers at risk of suicide. Li & Zhang [26] reported 348 cases of suicide among 5,389 total deaths, or 6.5% of total deaths. They noted that the number of suicides and homicides has consistently fallen over the years and suggest this is a result of improved working conditions on board UK ships. Roberts [27] compared mortality rates of seafarers in the UK fleet and in Flag of Convenience registry ships and found the mortality rates were an estimated 3.2 times greater in foreign-flagged vessels and a greater number of seafarers in FOC fleets took their own lives or disappeared at sea. In a classic book describing ‘Voyages of Abuse’, Couper et al. [13] list many instances of seafarers being abused by dodgy ship owners and shipping lines, recruiting agencies, and bankrupt shipping companies. Neilsen and Roberts [28] studied fatalities in the world’s merchant seafarers and concluded that it is likely that “...in excess of 100 seafaring deaths a year are due to suicides in the world’s merchant fleets”. Park-

er et al. [29] studied stress and fatigue among Australian seafarers and found the specific sources to be hardships at sea, weather, broken rest, long hours, and industry change. Hansen and Jensen [14] found female seafarers were adopting the risky lifestyle of male seafarers, with a large number of suicides (7) in comparison to total deaths (39), or 18.0%. Hansen and Pedersen [30] studied Danish seafarers and found 81 suicides (10.5 %) of 774 deaths.

CAUSES OF POOR SEAFARER MENTAL HEALTH

The causes of mental illness among seafarers are well known. The International Committee on Seafarers’ Welfare booklet “Guidelines for Mental Care onboard Merchant Ships” [6] cites stress, harassment and bullying, anxiety, fatigue, disruptive thinking and behaviour, and addiction to alcohol and drugs. To these must be added loneliness, short ship-turnaround times, lack of shore leave, separation from spouses and families, job retention, and long working hours. Piracy and criminalization of seafarers are also causes.

Loneliness

There is no doubt that loneliness creates problems for seafarers. Lefevere [32] quotes the 80-year-old Brazilian priest Fr. Mario Bilbi: “Loneliness is a seafarer’s heaviest cross, the Brazilian priest said, noting that many seafarers are away from home up to 10 months. It’s the presence of God and the thought of their families that is awakened at sea, especially at night when you’re alone on the bridge. What you see is darkness. What you hear is the talk of the waves.”

Malakauskiene [31] (n.d.), citing Agterberg and Passchier [33], and Sampson and Thomas [34], says they “showed that the main psychological problems were primarily caused by long periods away from home, social isolation and its effects on seafarers, the decreased number of seamen per ship, and increased automatization”.

Separation from spouses and families

One of the first things that seafarers do when visiting any of the five seafarer centres in the Australian State of Victoria is to head for a bank of computer consoles they can use to communicate with their spouses and families at home. There is no charge to use these computers and it is not unusual on any evening to see banks of 5 to 20 computers (in the five different centres) completely filled with seafarers using Skype to see and talk with their families. Many use centre facilities to wire money home to families. A few ship owners allow some crew mem-

bers to have their families on board. In mid-2009 at the Stella Maris Seafarers' Centre in Melbourne I met the second engineer from a ship with an all Filipino crew. He had his wife and two children with him on the ship during the voyage.

Stress

The International Committee on Seafarers' Welfare booklet "Guidelines for Mental Care Onboard Merchant Ships" has one chapter devoted to the problem of stress for seafarers [6]. It says "Typical symptoms of stress are insomnia, loss of mental concentration, anxiety, substance abuse, extreme anger and frustration, family conflict, and physical illnesses such as heart disease, migraine headaches, stomach problems, and back problems. Six key areas (or 'risk factors') can be causes of work-related stress on board. These are: the demands of the job; the level of control seafarers have over their work; the support received from management and colleagues; relationships at work; the seafarers' role in the organization; and change and how it is managed. When under severe stress, a seafarer fails to take clear-cut decisions, fails to re-evaluate and reassess priorities and lifestyles, and ultimately tends to fall into unproductive distractions. This can be described as a classic case of 'burnout'. Chronic responsibility syndrome is a kind of burnout where people become mentally and physically exhausted from their workload. The symptom is often described as 'there's too much work to do, and no one else can do it but me'. Typically it will occur in hard working, hard driven people who become emotionally, psychologically, or physically exhausted." Leszczyńska et al. [20] report that stress is related to a triangulation of factors. They say, "Triangulation means collecting evidence from three sources: Precursors-perception and feeling (moderating factors), direct consequences, and state of health." The possibilities of collecting data at sea are analysed regarding these individual factors.

Fatigue

Allen et al. [21], in a review of the recent literature on fatigue, say, "Fatigue has been noticeably under-researched compared to other transport sectors. While diversity in the seafaring population has the potential to make global fatigue estimates meaningless, evidence of mis-recorded working hours shows how cultural and commercial pressures are universally shared." Smith et al. [24] say that "Fatigue is strongly linked to mental health problems which are clearly risk factors for more chronic disease and early death (e.g. suicide). "A classic acci-

dent resulting from fatigue due to lack of sleep by a ship's officer occurred in Australian waters on April 3, 2010. The 225 metre long Chinese bulk carrier *Shen Neng 1*, carrying 65,000 tons of coal and 950 tons of heavy fuel oil, ran aground in a restricted zone on the Great Barrier Reef as a result of the officer forgetting to plot a safe passage of the ship through the reef due to fatigue from lack of sleep. According to news reports the ship gouged a path three kilometres long through the reef. An environmental disaster was avoided because the weather was good and except for leaking a small amount of fuel oil the ship was refloated and taken to a safe anchorage prior to returning to China for repairs. The Australian Transport Safety Bureau has released a final report on this grounding, which says the accident was caused by fatigue of the officer responsible for plotting the ship's path through the Great Barrier Reef [35].

Lack of shore leave

Von Dreele [36], in a paper delivered at a petroleum industry conference, stated, "At SCI (Seaman's Church Institute) we have 10 years of statistics of our ship visits and services. Remarkably, shore leave levels have averaged only between 20–25% per ship. There are a number of factors beyond turn around times that account for this low percentage: working, need for rest, lack of a US visa, and depression. The implementation of TWIC (Transportation Workers Identification Certificate) will restrict any crew members who currently walk through a terminal to the gate for shore leave."

In August 2010 I went aboard a large container-ship in Melbourne to deliver booklets in English on depression to the master (who also asked for our other booklets in Chinese and Russian, even though the crew was made up of Filipino seafarers, who are usually thought to have a good command of English). I was told the crew had trouble getting shore leave in several U.S. ports for a variety of reasons, some relating to U.S. Coast Guard security regulations, others relating to ship turn around times and the difficulty of simply getting to the dockyard gate from the berthing area.

Short ship-turnaround times

Short ship-turnaround times are a problem. In Melbourne turnaround times for container ships are not more than three days and in most cases less than that. However, bulk cargo ships or combination container/bulk cargo ships may be in port for somewhat longer periods. A significant number of automobile carriers call in Melbourne. Their cargos of 5,000 or 6,000 automobiles can be discharged in

24 hours, after which they are able to leave. This can result in seafarers not getting a chance to go ashore because their duties aboard ship does not leave enough time for even a half day ashore.

Job security

Most non-rated seafarers are employed on nine- or ten-month contracts. As these contracts end the seafarers are said to be very concerned that their contracts will not be renewed, thus ending a chance to send money home as repatriation of wages. As a result of the great financial crisis of 2008 the international shipping industry was severely affected with many ships unable to obtain charters, causing seafarers to worry about job retention. Many ships were tied up and some anecdotal accounts said newly constructed container ships were being used as temporary storage warehouses for the surplus of empty containers that accumulated because of the lack of business.

Cultural problems

Von Dreele [38] also says, “Chaplains and ship visitors often confront the clash of cultures and nationalities aboard ship. Certain nationalities should never be put together on the same ship. Racism and abuse are prevalent on many open registry ships today. To compound all of this, the seafarer has to deal with the immense isolation aboard ship. He is gone for up to nine months and rarely has an opportunity to contact his family”. However, in fairness to ship owners, crew members are now often allowed access to email facilities aboard many ships. This is particularly true of large oil tankers and of ships managed by reputable shipping lines.

Abuse

Couper et al. [13] describe a type of abuse that merits its own category. They say, “This is about seafarers employed within the sector of merchant shipping which is regarded as substandard. By substandard we include ships defective in structure and equipment, and those with low wages and poor working conditions. Very often they are the same vessels. In this substandard sector of ship owning, seafarers are exploited and abused, and respectable shipping companies are exposed to unfair competition.”

Criminalization

The term “criminalization of seafarers” is used to describe the treatment of maritime incidents as “true crimes”. It is also used as a blanket term to describe the denial of procedural and human rights

in the investigation and prosecution of those incidents [37]. Many actions against masters and ship’s officers have occurred as a result of oil pollution incidents. According to Maris [39] “...recent cases have shown a marked tendency for seafarers to be criminally prosecuted for maritime accidents beyond their control; criminally prosecuted for maritime accidents where there has been some negligence, regardless of the fact that such negligence is not considered criminal in the maritime industry; detained indefinitely within the country bringing charges against them; held as ‘security’ or ‘material witnesses’ till the ship owner or P&I club pays up; held in custody without any access to legal assistance or without being formally convicted of a criminal offence; and denied shore leave for arbitrary reasons”.

A classic case of criminalization of ship’s officers is that of the tanker *Hebei Spirit*, while at anchor in the Yellow Sea six miles off the resort island of Taean, South Korea. On December 7, 2007 the *Hebei Spirit* was struck by an uncontrolled crane barge that collided and punctured three oil tanks. This caused a release of 12,547 kilolitres of oil, which impacted nearby beaches ten days later. Master Jasprit Chawla and Chief Officer Syam Chetan were cleared of any wrongdoing at their first trial but were kept in jail while the prosecutors appealed. A second trial found them guilty and sentenced them to three years in prison and a fine of \$22,530. They finally returned home in India on June 11, 2009 after the case was dismissed and they had been in custody for 18 months. Such criminalization can have serious effects on seafarers’ mental health. Von Dreele [38] reported that “... depression and addictive behaviour has surfaced among the crews...” and that “a defendant in one case tried to commit suicide” during a pollution incident near Philadelphia, U.S.A. The Baltic and International Maritime Council has said criminalization could effect recruitment of seafarers by causing some individuals to forego seeking a career at sea.

Piracy

The continued hijacking of ships off the coast of Somalia in the Indian Ocean and off the east coast of Africa is becoming more and more of a problem as the methods used by pirates become more sophisticated. The 2009 hijacking of the *Maersk Alabama* and its successful release due to the heroic actions of its Master and the killing or capture of the pirates by the U.S. Navy has highlighted the problems of seafarers captured and held hostage by pi-

rates. John Bainbridge of the International Transport Workers Federation called 2011 the 'Year of the Pirate' with 450 hostages taken and 15 murdered. He reported increased violence, abuse and threats to hostages, and longer hostage periods (averaging more than 210 days). The maritime newspaper Telegraph [40] reported that "Naval forces have helped to secure a significant reduction in the number of successful pirate attacks, a new report claims. The International Maritime Bureau (IBS) statistics show that Somali pirates hijacked 40% fewer ships in 2011 and that the total number of attacks fell from 445 in 2010 to 439 in 2011 – ending four consecutive years of increases."

Cases of depression among seafarers subsequently released by pirates after a ransom has been paid are common. The Seamen's Church Institute in New York City, aware that the trauma caused by being on a hijacked ship and/or taken hostage can affect the mental health of seafarers, has completed a study on post-piracy assessment and trauma [41]. Efforts of flag states and ship owners to place armed guards aboard merchant ships have caused problems concerning the legal aspects of such action; however, recent press reports cite that armed guards have been placed aboard some ships by ship owners. British Prime Minister David Cameron has said he is going to make changes in the regulations covering the use of armed security guards [42].

RESULTS

SUICIDE – A SERIOUS PROBLEM

The evidence that suicide among seafarers is a serious problem is incontrovertible. Suicides among seafarers have been widely reported, as shown in Table 1. Several cite seafarers that have disappeared without a trace and which are thought to be suicides. Roberts & Marlow [25] reported deaths of disappearing seafarers as follows: "...178 seafarers in this study were due to disappearances at sea or seafarers who were found drowned. From examining official inquiry files, suicide was the most plausible cause in about half of these 178 cases." Of these, 87 disappeared without trace, and most were thought to be suicides. Disappearing seafarers are also discussed in Low [43]. Suicide by seafarers is much higher than suicides in general populations. In Australia, for example, suicides were two per cent of the country's total deaths in 1998 [44] and 1.5% of all deaths in 2008 [45]. In the United Kingdom suicides in 2011 were 1.2 % of all deaths [46]. If half the cases of disappearing seafarers at sea were included in the data, as suggested by Roberts and Marlow [25], the percentage of sui-

cides would be higher. Percentages of deaths due to suicide are given in Tables 1 and 2.

ECONOMIC COST OF POOR SEAFARER MENTAL HEALTH

When a ship's voyage is stopped or is diverted because of a mentally ill seafarer or a seafarer disappearing at sea, the dollar cost to the ship owner or charterer can be very high. In 2012 the daily cost of operating a 3,000–4,000 TEU container ship built in 2000 is expected to be US\$7,825 (information on the costs of operating container ships is provided with the permission of Drewry Maritime Research, London). This does not include the cost of fuel oil. This is based on the following categories of expenses: manning, insurance, stores, spares, lubricating oil, repair and maintenance, and management of administration. It includes a daily cost over five years of dry-docking at US\$551,000. In 2012 the expected daily cost of operating a 10,000 TEU container ship built in 2000 is US\$10,944. This is based on the yearly cost of the same categories of expenses including dry-docking at US\$750,000. The daily cost of fuel oil can be higher than all other daily costs of operating container ships. Fuel oil costs can be as high as US\$30,000 per day depending on the Singapore price of fuel oil. To this should be added the cost of mortgage insurance and capital repayment (Prof. Alastair Couper, personal communication). He notes that in the case of high value perishable cargo, its loss could also be an added cost to the ship owner.

A recent case in Australia highlights how a ship can lose several days and a large amount of money due to the disappearance of an officer. On Saturday April 9, 2011 the Korean Master of the 180,176 dead weight tonnage bulk carrier *Ocean Caesar* was reported missing at 4:15 p.m. about 40 nautical miles northeast of Sandy Cape, Queensland. Aircraft of the Australian Maritime Safety Authority (AMSA) conducted a search throughout Saturday and Sunday, including using infra red sensing equipment at night. Unfortunately, the Master was not found. The *Ocean Caesar* was forced to divert to a Queensland port while AMSA, the Australian Transport Safety Bureau, and local authorities conducted an investigation over several days. The unexpected economic loss to the shipping line of the bulker being diverted and then spending days in port may have been as high as US\$50,000–US\$100,000 plus costs to bring a new master to Australia for the ship.

TWO MENTAL HEALTH PROJECTS PROVIDING HELP FOR SEAFARERS

On board help from Rotary

The Mental Health of Seafarers is an Australian project initiated by the Rotary Club of Melbourne South (RCMS) with the cooperation of the Melbourne Port Welfare Association (MPWA); Beyondblue, the national depression initiative; the Stella Maris Seafarers' Centre in Melbourne and the Mission to Seafarers Victoria. The MPWA is a group of 15 prominent organizations on the Melbourne waterfront that works to make the visits of seafarers pleasant and enjoyable. Beyondblue leads an Australia-wide advocacy on understanding depression and removing its stigma. The Stella Maris Seafarers' Centre in Melbourne and the Mission to Seafarers Victoria between them operate five centres where seafarers can rest, relax, wire money home, communicate with families via the internet, purchase small personal items, and receive pastoral counselling if they are in distress.

This project was the result of discussions between the RCMS and members of the MPWA, after research by the RCMS showed that seafarers are more likely to have a mental illness than their counterparts on shore [55]. Its purpose is to produce printed information on the single mental health issue of depression for distribution to masters and non-rated officer on the more than 2,000 ships carrying 60,000 seafarers that berth in Victorian ports each year [56], so that depressed crew members can be identified and helped and the stigma associated with such an illness can be reduced. In 2011 about 20,000 seafarers visited the Mission to Seafarers and Stella Maris Seafarers' Centre in Melbourne. The top three nationalities visiting the centres were Filipino, Chinese, and Indian seafarers.

Statistics gathered by the two seafarer centres in Melbourne show that 85% of seafarers visiting Melbourne speak English, Chinese, Tagalog, or Russian. Eight-page booklets in colour for masters and smaller 16-page leaflets for non-officer seafarers were printed in those languages. Each contains hotline telephone numbers that masters or ship's officers can call for help concerning a depressed seafarer. The hotlines are manned 24/7 by call centres at Lifeline Australia and the Federal government's Translation and Interpreting Service (TIS). If a non-English speaking seafarer calls for help, a conference call with Lifeline Australia, TIS (which provides an interpreter) and the seafarer is arranged. The booklets contain a checklist to identify someone who is depressed,

understanding depression, how someone with depression can be helped, and on reducing stress. The smaller leaflets for non-officer seafarers have the same information but in a shortened version. The Rotary Club's website contains copies of booklets for masters and the leaflet for non-officer seafarers on depression in English, Chinese, Tagalog, and Russian, which can be downloaded and printed at no cost. To obtain the booklets and leaflets go to www.seafarersmentalhealth.org and follow the prompts.

Shipping Australia Ltd., working with InchCape Shipping Services and their associated corps of ship's agents, has also undertaken distribution of the material, so it is now being placed on board ships in 17 Australian ports. By the end of 2012 it is estimated the information on depression will have been placed on board 3,500–4,000 merchant ships. In 2010 and 2011 several depressed or troubled seafarers were given help after reading the booklets or leaflets. Because the project has been successful, the RCMS is making efforts to make its work known internationally.

On board help from the ICSW

The London-based International Committee on Seafarers Welfare (ICSW) has produced booklets titled *Guidelines for the Mental Care of Seafarers' onboard Merchant Ships* [6]. The ICSW, aware of the importance of the health of seafarers, has produced the guidelines as part of its new mental health project, which is funded by the International Transport Workers Federation's Seafarers' Trust. The ICSW's Seafarers' Health Information Program is part of its *Mental Care* initiative. The guidelines are in a colourfully illustrated 12-page booklet with humorous cartoons of seafaring life. It covers the following 12 topics: Risks for Seafarers, Stress, Harassment and Bullying, Anxiety, Depression, Fatigue, Disruptive Thinking and Behaviour, Addiction to Alcohol and Drugs, Mental Care Onboard, Tips for the Successful Implementation of a Mental Care Campaign, and Where to Find Advice.

The ICSW's booklet notes that "Although psychological problems are very common among seafarers, the mental health of seafarers has only comparatively recently started to receive the attention it deserves. True mental illness occurs independently of any physical ailment. Normally a difference in behaviour can be seen, ranging from just slightly unusual to completely abnormal. This can vary between mild anxiety attacks to depression, disruptive thinking, or aggressive behaviour. Even more tragically, it can lead to suicide." Booklets can be obtained by going to www.icsw.org.uk and clicking on the Online Shop.

DIFFERENCES BETWEEN THE TWO PROJECTS

The basic difference between *The Mental Health of Seafarers* project and the ICSW's project is that the Australian initiative covers only one topic: depression, while the ICSW's guidelines are a much broader approach to seafarers' mental health. It is hoped that the two projects described in this paper will be able to help bring about long needed improvements in the mental health of seafarers.

DISCUSSION

DEPRESSION AND SUICIDE

The reasons for seafarers becoming depressed, which in many cases result in suicide, are well known. These include loneliness, separation from spouses and families, stress, fatigue, lack of shore leave, job security, cultural problems, abuse, criminalization, and piracy. The statistics of the percentage of seafarer deaths by suicide prove that the mental health of seafarers continues to be very poor and are a call for action to have them reduced. The compilation of 20 published reports covering the years 1960–2009 showing that 1,011 seafarer deaths out of 17,026 total seafarer deaths were by suicide – for a percentage of 5.9% of all deaths – is something that cannot be ignored. They ranged from a low of 3.1% to a high of 18.0%. A second compilation of 12 reports of deaths due to illness from 1992–2007 showed 590 seafarer deaths by suicide out of 4,573 deaths due to illness, or 13.1% of deaths. In these 12 studies the percentages ranged from a low of 5.7% to a high of 27.5%. Both of these compilations would be even higher if the number of seafarers disappearing at sea were included. Three studies, Borsch et al. [2], Roberts and Marlow [25], and Li and Zhang [26] reported some reduction in suicides. Many social science researchers believe that at least half of deaths due to disappearance at sea are due to suicide. Whether suicides by seafarers are calculated as percentages of total deaths or percentage of deaths by illness, the results can only be described as shocking.

Both methods of describing seafarer deaths by suicide as percentages should be readily understood by ship owners or government officials who may not have the technical knowledge of using rates to report seafarers' deaths. Comparing the percentage of seafarer deaths by suicide to deaths from natural illness is presented in the hope it may result in social science researchers commenting on whether or not it is an appropriate method. More research is need-

ed to identify the many causes of fatigue and stress and for ship owners to reduce the factors causing fatigue and stress in the seafarers that crew their ships.

ECONOMIC COSTS

When the costs of operating ships are calculated in terms of specific items like fuel oil, repairs, and dry-docking, losses due to mental illness cannot be anticipated, but when they occur the economic cost to ship owners because a voyage is diverted or delayed because of a mentally ill seafarer or one who disappears at sea can be very high. The recent case of a master disappearing at sea near Australia may have cost the ship owner as much as \$50,000–US\$100,000 due to the voyage being diverted and delayed. It does not take very long to have daily operating costs due to a voyage being diverted and delayed to mount up even higher. With the daily costs in 2012 of running a 3,000–4,000 TEU container ship expected to be US\$7,825 and a 10,000 TEU container ship expected to be US\$10,944 (not including the costs of fuel oil, mortgage insurance and capital repayment), efforts need to be made to lessen costs due to poor seafarer mental health. Job satisfaction is important. Diederichsen [57] says 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.

PROJECTS TO IMPROVE SEAFARERS' MENTAL HEALTH

The projects by the Rotary Club of Melbourne South and the International Committee on Seafarers' Welfare, which provide written information on mental illness in general and on depression to masters and seafarers, are the only two such projects that are known to Rotary. They could have more positive effects if such approaches resulted in all ships world-wide receiving information on depression and the causes of poor mental health of seafarers.

The Mental Health of Seafarers project by the Rotary Club of Melbourne South (RCMS) was started in 2009 in cooperation with the Melbourne Port Welfare Association and ship's agents to provide print-

ed booklets and leaflets on the sole topic of depression for masters and crew members. By the end of 2012 it is estimated that this material will have been distributed on 3,500–4,000 ships in 17 major Australian ports. The Rotary Club of Melbourne South is undertaking efforts to make its approach to seafarers' welfare known internationally. Details of a plan showing how the project developed and is being run can be obtained by going to the project's website at www.seafarersmentalhealth.org and following the prompts. The project to improve the mental health of seafarers by the International Committee on Seafarers' Welfare is being successfully undertaken with the financial assistance of the International Transport Workers Federation.

CONCLUSIONS

The data on suicides proves that the mental health of seafarers in many cases continues to be very poor and often fatal. With deaths aboard merchant ships resulting from depression leading to suicide being widely reported, the damage to the seafarers, their families, and ship owners cannot be ignored. This strongly demonstrates the need for everybody connected with the international maritime shipping industry to do something about it. The mental health of seafarers and the economic health of the shipping industry will be improved as a result.

RECOMMENDATION FOR FURTHER ACTION

The following is offered towards reaching a goal of all ships worldwide receiving information specifically on the mental health of seafarers. It is suggested that leading international organizations that are concerned with the welfare of seafarers, such as the International Maritime Health Association, the International Transport Workers Federation, the Baltic and International Maritime Council, the International Chamber of Shipping and the Asian Shipowners Forum, working with organizations like the philanthropic TK Foundation (whose website says it has a "great affection for seafarers and a passion for ships and the sea"), produce booklets and leaflets modelled on those produced by the Rotary Club of Melbourne South and the International Committee on Seafarers Welfare, in languages used by most seafarers, for distribution on board all ships.

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