

# Rates and occupational characteristics of international seafarers with mental illness

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<b>Background</b>	Seafarers enable 90% of global commerce, working in isolation from social support and medical care. While occupational conditions of isolation may suggest possible excess risk of mental illness and suicide, research on seafarer mental illness is limited.
<b>Aims</b>	To describe seafarers with mental illness and associated incidence rates in a large population of international seafarers.
<b>Methods</b>	We used mental illness claims data from a large international marine insurance provider arising from working seafarers during the years 2007–15. We used descriptive statistics and calculated mental illness incidence rates in this seafarer population.
<b>Results</b>	There were 278 seafarer mental illness claims in the study data. Claims were more often reported in deck workers (46%) and ratings (58%). The crude mental illness rate was 3.9 per 100 000 person-years.
<b>Conclusions</b>	Using objective data on a large seafaring population, our analysis highlights the important issue of mental illness in this isolated and underserved international workforce. The low observed mental illness claims rate is likely due to the high threshold for claims reporting.
<b>Key words</b>	Mental health; occupational health; psychosocial hazard; seafarer.

## Introduction

Ninety per cent of global commerce is by water [1], constituting the work of ~1.6 million seafarers around the world [2]. While studies have described multiple psychosocial stressors in the seafaring workplace [3–5], the literature on mental illness in seafarers remains limited. Studies of seafarer mental health have mostly reported suicides, demonstrating high historical suicide rates in seafarers compared to other workers [6]. While recent studies suggest trends towards general population rates, these studies used mortality databases of European seafarer populations that are not generalizable to international seafarers [6,7]. The underlying burden of mental illness and associated demographic and occupational risk factors also remain unknown.

This paper describes the demographic and occupational characteristics of seafarers with mental illness claims in one large protection and indemnity (P&I) club, Gard,

which covers ~17% of the world's tonnage and 15% of the global seafarer population. We also present rates of mental illness claims allowing for comparison to other industries.

## Methods

Mental illness claims data arising from seafarers on Gard vessels during the years 2007–15 were analysed. Mental illness cases were included in the database if the seafarer was observed to have behaviours deemed consistent with mental illness by the ship's captain or medical officer, including social withdrawal, mood swings or other concerning changes. This typically resulted in a medical check-up at the next port of call.

We restricted our analysis to cases occurring on vessels with corresponding information for estimation of crew numbers allowing for calculation of incidence rates. We grouped seafarer demographic factors to better allow

## Key learning points

### What is already known about this subject:

- Psychosocial hazards are prevalent in seafaring.
- Suicide rates in seafarers are historically high.
- Existing studies on seafarer mental health may not be generalizable to current seafarer populations.

### What this study adds:

- Mental illness affects seafarers from many nationalities, ranks and worksites.
- We found a crude medical claims rate for mental illness in seafarers of 3.9 per 100 000 person-years, using data representing 15% of global seafarers, which is probably an underestimate of the true burden of mental illness at sea.

### What impact this may have on practice or policy:

- Characterizing the burden of mental illness at sea may reduce stigmatization of mental illness in seafarers and encourage positive industry policies.
- Further research regarding underlying rates and potentially modifiable risk factors for mental illness in seafarers may identify specific opportunities for prevention and improved clinical management while working isolated at sea.

for comparisons. We classified seafarer job title by rank (as lower-ranking ratings or higher-ranking officers, per vessel hierarchy) and worksite.

To determine mental illness rates we calculated a population denominator by multiplying the average number of vessels per year by the average crew number for each vessel type (tugs = 6, other vessels = 20), based on our knowledge of the industry. We report rates in units of cases per 100 000 person-years (PY). The study was approved by the Yale Institutional Review Board (IRB). Data analysis was performed using SAS v9.4 (Cary, NC).

## Results

There were 278 seafarer mental illness claims between 2007 and 2015. Characteristics of seafarers in the mental illness claims database are presented in Table 1. In seafarers with mental illness claims, most were younger (age <40), with fewer claims associated with age >40. Most seafarers in the database were from Europe (123, 44%) or from the Philippines/Pacific region (94, 34%). Claims were more often reported in deck workers (129, 46%) compared to other vessel worksites. Ratings, compared to officers, submitted a higher proportion of claims (160, 58%).

The crude mental illness rate based on claims was 3.9 per 100 000 PY. Vessels with the highest reported rates were heavy lift vessels, offshore safety vessels, gas carriers and vehicle carriers. Rates for all vessels are displayed in Table 2.

## Discussion

The seafarer and shipping community recognizes the need for improved data sharing on incidence of mental illness and related health conditions, to foster supportive workplace environments and communities, and reduce

the stigma of mental illness in shipping [8], and this study is an important collaborative initiative. The mental illness claims analysed in this study probably represent a fraction of the burden of mental illness in seafarers, which may be under-reported due to social stigma, fear of losing their jobs or other reasons. Our data support that mental illness occurs in seafarers of all ages, rank, worksite and many nationalities represented in current

**Table 1.** Distribution of seafarers with mental health claims

Category	Level	n (%)
Age (years)	<30	122 (44)
	30–39	67 (24)
	40–49	51 (18)
	50≤	38 (14)
Region	Europe	123 (44)
	Philippines/Pacific	97 (35)
	India/Asia	39 (14)
	Other	4 (1)
	Unknown	15 (5)
Worksite	Deck	129 (46)
	Engine	104 (37)
	Galley	33 (12)
	Other	3 (1)
	Unknown	9 (3)
	Rank	Rating
Officer		106 (38)
Other		3 (1)
Unknown		9 (3)

**Table 2.** Rates of mental illness claims by type of vessel

Vessel type	Incidence rate <sup>a</sup>
Heavy lift	11.8
Offshore safety	7.3
Gas carrier	6.6
Vehicle carrier	6.6
OBO <sup>b</sup>	6.3
Offshore specialist	6.2
Tanker	5.7
Tug	4.9
Container	4.2
Offshore AHTS <sup>c</sup>	3.7
Research	3.3
Bulk	3.2
Offshore supply	2.4
General cargo	2.2
Reefer	2.1
Ro/Ro <sup>d</sup>	1.8
Chemical parcel carrier	0.6
Overall rate	3.9

<sup>a</sup>Mental health claims rate, per 100 000 PY.

<sup>b</sup>Ore-bulk-oil.

<sup>c</sup>Anchor handling tug supply.

<sup>d</sup>Roll on/Roll off.

crewing trends. We found the highest mental illness rates in heavy lift vessels and offshore safety vessels and the lowest rates in chemical parcel carriers. The different rates by vessel, if confirmed in additional studies, may suggest variation in psychosocial occupational hazards between vessel environments.

Recent reviews assessing stress in seafaring describe social isolation, poor sleep/fatigue, limited recreation activities and multicultural crews as potential sources of stress while working at sea [9]. The socio-anthropological seafarer literature has documented psychosocial stressors at sea, including chronic fatigue, social isolation, language and cultural barriers, and job insecurity among other stressors [3,4]. A study in Swedish mariners noted significant harassment or bullying [5]. Investigation of seafarer suicides in British shipping companies between 1976 and 2005 found that crew conflicts, disciplinary problems, work pressure and cancellation of shore leave were a major factor in ~30% of seafarer suicides [6].

There is little published research on incidence and prevalence of depression, anxiety and work-related stress in large populations of seafarers, nor their related morbidity and mortality. Our data uniquely describe rates of mental illness in a large, representative sample of seafarers. These rates are probably an underestimate of the true burden of seafarer mental illness, considering a depression rate of ~10% for depression in workers across multiple non-maritime industries [10]. This is probably due to the high claim threshold.

This study had several strengths; most significantly the use of objective data from a large representative P&I club. As one of the major challenges in seafarer occupational medicine research has been access to seafarer data, this study represents an important contribution. There were some unavoidable limitations of this study. The distribution of seafarers by demographic and occupational factors was unavailable; therefore, we could not calculate stratified incidence rates. In addition, specific mental illness diagnoses were unavailable, so it is possible that some observed behaviours triggering a mental illness claim were due to non-psychiatric pathology.

Our analysis highlights the important issue of mental illness in a neglected, isolated and globally indispensable workforce. Future studies using data on at-risk seafarer populations and medical records or mental health surveys may better enable determination of rates and characterization of risk factors for seafarer mental illness.

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## Competing interests

None declared.

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