The journey from health and safety to healthy and safe

Exploring the factors that influence physical and psychological health in safety-critical industries

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Executive summary

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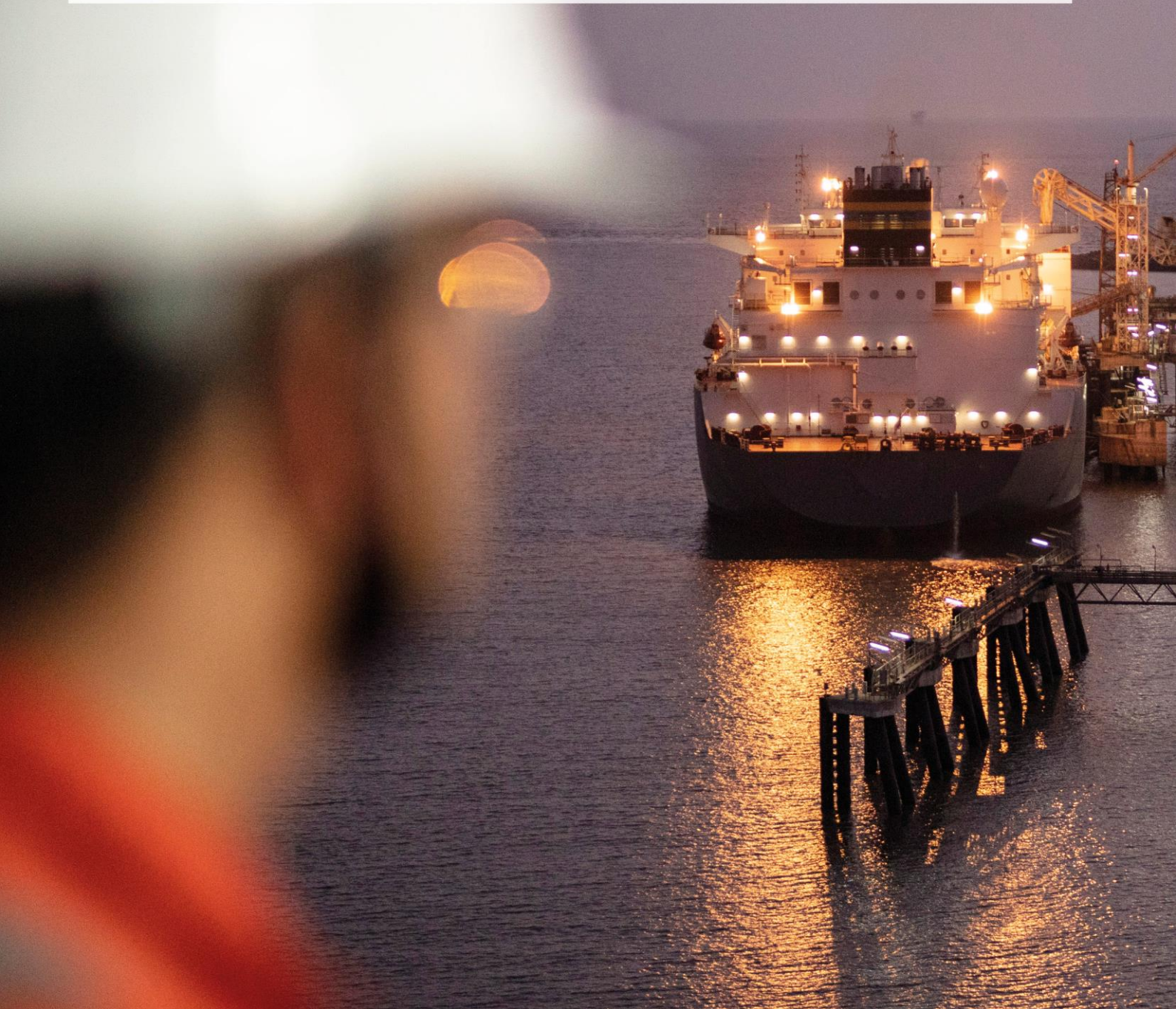

Introduction

The wellbeing of seafarers has a direct impact on their work and safety performance and shapes their experience of life at sea. Equally, seafarers' health and wellbeing is influenced by the conditions in which they work. Despite efforts to promote positive work conditions through initiatives such as The Maritime Labour Convention (MLC) 2006, there is a view that:

- companies require further information and understanding of how to improve the health of their seafarers;
- companies are not fully aware of the links between poor health (physical or psychological) on both safety and operational performance; and
- whilst interventions to improve health and wellbeing exist and are being implemented, they are fragmented, not aligned and therefore not optimally used.

Advances in shipping are being made in the technical space, using data and sophisticated analytics to identify 'weak signals', as precursors to major safety incidents.

The purpose of this research is to increase understanding of the factors affecting psychological and physical health in the seafaring community. This information will be used to identify data and interventions that could unlock the potential of health to improve safety at sea.

Research questions and methods

Four key questions shaped the research:

1. What factors influence psychological and physical health in seafaring, and other safety-critical industries?
2. How and in what ways do/can psychological and physical health influence adverse incidents?
3. What existing data could be collected on health-related factors that could impact on safety?
4. What interventions are there in seafaring, and other safety-critical industries, that could be implemented in order to bring about a positive impact on the psychological and physical health of seafarers?

Whilst the main aim of the work was to support the seafaring industry in its drive to improve wellbeing and safety, it also explores potential learning from other industries. The research reviewed publications from a wide range of safety-critical industries (50 high quality papers), including construction, nuclear, military, aviation, and rail. Views were sought from a multidisciplinary group of experts and practitioners, combining deep subject matter expertise with practical experience (28 interviews conducted).

Results

As the data was analysed and re-analysed, five main themes emerged where the evidence of influence was strongest:

Fatigue was commonly cited both as part of a causal chain leading to an adverse event or injury and as an outcome of other factors (e.g. noise and heat on vessels). Fatigue often emerged in relation to long working hours, changes in working hours, the nature of shift work in safety-critical industries and overtime.

The nature of the work environment describes the wider conditions on ship and the nature of the particular voyage. It includes issues such as heat and noise, vibrations and ship movement, the quality of food and access to gym and exercise facilities. It also includes length of deployment and time on board, as well as the impact of separation from their home and community.

The nature of the role emerged as a significant influence on physical and psychological health. Aspects of the role included level of autonomy, task and skill variety, and workload and job satisfaction. In some cases, rank had implications for the nature of the role that impacted health.

Socialisation encompassed the nature of social interaction and communication on board, the potential impacts of social isolation, cross-cultural differences and awareness, as well as the transient nature of crews on ship. It also included the culture and openness of communication on ship, particularly with respect to hierarchy.

Leadership sets the tone on board ships, influencing the conditions in which work takes place, the level of social support and interaction, and the broader culture.

Attempting to comprehensively explain, evidence and detail how such a complex web of health-related factors leads to a variety of incidents at sea is a herculean task, and one not seen in any other industry. However, it has been possible to develop a conceptual framework, based on existing theory and evidence, of how health-related factors may ultimately impact on adverse incidents.

Potential sources of data were explored, and analysis was undertaken in other industries through the interviews with experts. One central conclusion is that across safety-critical industries, there is a desire to increase the focus on health-related factors and collecting and using health-related data would be of huge benefit. Of the data sources identified, whilst aspects of the content mapped well onto our five themes, none of them comprehensively covered all aspects. It is also true that for some of the routinely collected and potentially most viable data sources, concerns were raised over data quality and their perceived potential value.

Through the discussions and consultations, the authors realised that there are models of human behaviour that may explain *why* the five main themes emerged so strongly. One model that struck as having particular applicability and explanatory power is the SCARF model developed by David Rock.

Over the course of the research, lots of examples of practices or situations common to the seafaring experience were found to fit well into this framework.

A number of common interventions were discussed across all of the safety-critical industries included in the research. These included: employee assistance programmes and counselling helplines; telemedicine; training regarding the importance of good nutrition and physical exercise; and methods to improve crew/team socialisation. However, there were a range of interventions discussed in other industries that could be implemented into the maritime sector that focus more on some of the psychosocial factors that were identified as being important. These interventions include peer support mechanisms (highlighted in construction, the military and aviation), line management training and development (identified in the rail industry and military) and simulation exercises (identified in aviation).

Final insights

The results highlight a clear consistency of key themes and factors identified in the literature and through the expert interviews. Although some of these are more prominent then others, each on their own, and when interacting with others, can have an impact on the physical and psychological health of employees in safety critical industries. Focussing on high quality data collection to further understand their importance in the causal chain of unintended events is recommended, which will then provide further clarification and insight into what interventions to improve wellbeing will be most effective.