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Seafarers' Psychological Wellbeing: A Rapid Evidence Assessment

July 2022

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NOTTINGHAM BUSINESS SCHOOL

Table of Contents

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Executive Summary

The psychological wellbeing of seafarers is a longstanding concern within the maritime sector. Whilst practices aimed at addressing physical safety are well established, there is a lack of shared understanding around how psychological wellbeing is best conceptualised and the kinds of interventions which might be most effectively developed and scaled up within the sector. The apparent absence of an overarching framework in which to approach psychological wellbeing in relation to safety is an obstacle to identifying the 'active ingredients' around which interventions may be designed.

This report describes a Rapid Evidence Assessment conducted to identify the core literature around seafarer wellbeing. In comparison with techniques such as Systematic Reviews, REAs work to shorter timescales and make pragmatic decisions around the inclusion criterion for literature, which may enable a broader and more diverse range of studies and reviews to be identified. The current REA initially identified 691 pieces of literature as of interest, which was reduced to a final selection of 183. This literature covers highly varied approaches and interventions around seafarer psychological wellbeing, primarily but not exclusively focused on the Global North and all published in English language.

Analysis of the evidence base represented within the final selection of studies showed that approaches tended to either address psychological wellbeing as a standalone topic or within a holistic approach including physical health and health promotion. The majority of studies within the final selection used a cross-sectional design, typically utilising quantitative measures such as surveys and evaluation instruments, with a smaller range using either mixed-methods or qualitative methods. There were very few longitudinal studies and the sample sizes across most of the studies were comparatively small. Psychological wellbeing was usually treated within a framework of stress, coping and resilience, and tended to adopt the individual seafarer as the unit of analysis, rather than relationships within the workplace or structural factors.

The kinds of interventions described within the final selection of literature were grouped into the following categories: physical health, psychological wellbeing, counselling and therapy, training, digital tools and environmental. There was considerable diversity in the focus and nature of the interventions within each category. Where reported, the evaluations of the efficacy of interventions tended to demonstrate modest gains in relation to the target measure, with the exception of physical health interventions, where there were some cases showing negative effects. Follow-up and long-term evaluations were very rare and there was little evidence of interventions being scaled up or extended to other populations within the sector.

The diverse nature of the current literature may be an obstacle to developing approaches to psychological wellbeing and safety that match the standards and practices currently achieved in relation to physical health. There does not appear to be a single framework that offers the possibility of unifying existing work within the field or providing a suitable benchmark for evaluation. There is also no single approach to intervention that has gathered sufficient evidence for the identification of active ingredients for supporting seafarer psychological wellbeing. However, there is some evidence that seafarers themselves have clear preferences around interventions, typically those with a physical focus or involving enhanced recreational activities. This suggests that employee voice should be a clear focus in order to manage differing expectations between stakeholders. Finally, the diversity of the existing evidence base may actually be a strength rather than a shortcoming. Developing different methods for curating and analysing existing work, such as methods of continuous comparison and conceptual innovation, may help to develop approaches and interventions by discovering novel points of communality and interest that span cases which would not otherwise be considered together.

1. Background, Rationale and Objectives

It is widely recognised that seafarers continue to be at risk of poor psychological wellbeing and mental ill-health, compared to workers in other related sectors[1]. The issues that are likely to impact seafarer wellbeing have been exacerbated and spotlighted during the COVID pandemic, such as the 'crew-change crisis'[2], questions regarding regulatory compliance[3], and increased cases of fatigue and risk to safety[4]. At the same time, recent research indicates that the need for improving safety outcomes, by establishing and developing the best ways to boost wellbeing in maritime, can be influenced by factors such as organisational structure, culture, and general understanding of wellbeing[5]. Nonetheless, there remains a general lack of 'quality data', particularly regarding the overall efficiency of potential/existing approaches and interventions in wellbeing throughout safety critical sectors, including maritime[6].

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[1] Brown et al., 2020; Shan, 2021; Abila et al., 2022
[2] Institute for Human Rights and Business, 2022
[3] Baumler et al., 2021
[4] Shan, 2021
[5] Brown et al, 2022
[6] HSE, 2008; McVeigh, 2017; Atanda et al., 2020; Brown et al., 2020

The purpose of this Rapid Evidence Assessment (REA) is to establish the nature of the current evidence base for research on wellbeing in maritime and support for those working within the sector, with primary focus on the seafarers. It includes a focus on reported studies and data around interventions which have been adopted within the sector and efforts to identify the 'active ingredients' of supporting wellbeing. In doing so, it also explores the following questions:

➢ What is the current state of the field (i.e., what are the current studies which can be said to 'directly link to this theme'- what are the interventions studied, methods and approaches employed, etc.)?

➢ Are there any there any common/general themes being explored within the evidence base (what are the key discussion points which have emerged)?

➢ What are the current gaps and challenges (what has been identified or recommended as research priorities)?

2. **Approach**

This report has adopted an REA approach as an increasingly popular method in which to generate an overall assessment of what may or may not be known on a given subject and draw upon systematic methods to search and analyse empirical studies. In comparison with methods such as systematic reviews, REAs tend to work to shorter timescales and with pragmatic approaches to evidence review to accommodate these timelines, including a more limited selection of available material. For example, this may mean a narrowing of the sources searched for evidence, types of evidence included in the search, a reduced capacity of reviewers performing each task, and other 'considered compromises'[7]. Although the use of REA's has grown in prominence throughout policy and industry (including generating useful organisational and industry guides), there remains no definitive approach to this methodology[8].

Our approach has been informed by a mixture of past experience[9], guidance provided by organisations such as CEBMa[10], CIPD[11], the UK Civil Service[12], and DCMS[13], along with REA methodology literature developed throughout other disciplines and areas[14]. In refining

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[7] UK Civil Service, 2013; Barends et al., 2017; Lawton et al., 2021
[8] Ganann et al., 2010; Wilson et al., 2015; Haby et al., 2016; Esho et al., 2017
[9] Brown et al., 2020; 2022
[10] CEBMa, 2017

our approach to meet this objective, resources have been allocated in a manner which offered a more inclusive stance when gathering evidence – including further encompassing of material within the grey literature which may otherwise have been overlooked/discarded (for example, when applying a stringent hierarchal grading criteria). A multi-pronged and inclusive approach to evidence gathering has been most appropriate, given that the topic of supporting wellbeing within the maritime sector is both complicated and complex.

It is also important to appreciate the limitations of this approach, which often stem from the lean nature of REA's, and the need to compromise and make concessions appropriate to restricted resources (such as time and budget), compared to other methodological alternatives. It is acknowledged that not every piece of material that might have been considered relevant may have been captured. As such, further steps were taken including a review of matrices from previous REA research on the topic of wellbeing and safety, reference lists were also consulted, and a call for evidence from project stakeholders to their respective networks was issued. We are confident that this approach has returned a reasonably comprehensive list of relevant material which can adequately address the core aim of this project. In support of this, we note that the final selection within the evidence base that we have identified is far wider and

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[11] CIPD, 2021
[12] UKCS, 2013
[13] DCMS, 2020
[14] including healthcare – *see Crawford et al., 2015*

different in focus and conclusions from that in a recently published systematic review[15], which may serve as a useful point of

comparison.

For the purpose of this REA, we have adopted the following definitions:

Wellbeing in the context of work is understood as the mental and physical health of individuals as a consequence or result of the

dynamics within (and beyond) their working environment. In the wider literature, and in our previous work, it is acknowledged that

psychological and physiological wellbeing should be seen as intertwined. Indeed, as mental health can refer to emotional,

psychological, and social wellbeing; it is in the blend and functioning of these elements which allows us to be able to carry out our daily

lives effectively[16]. It is also noted that:

"Psychological wellbeing does not, however, require people to 'feel good all the time' in order to be sustainable. Individuals are

bound to experience a range of both positive and negative emotions as a part of daily life. Indeed, long-term psychological

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[15] Brooks & Greenberg, 2022
[16] ILO, 2009; Brown et al., 2020; CIPD, 2021

wellbeing instead relies on being allowed to manage and effectively process these emotions. When there are structural features within both our working and personal lives that impede this management of emotions, poor mental health is likely to follow as a consequence"[17].

Seafarers/Seafaring refers to those 'employed to serve aboard any type of marine vessel' and most commonly will apply to active seafarers but can also include those inactive but with 'a long history of serving within the profession'[18]. This according to the maritime labour convention encompasses 'any person, including a master, who is employed or engaged or works in any capacity on board a ship and whose normal place of work is on a ship'[19]. In consequence, there are some exclusions. For example, workers on offshore installations, no matter what their duties, are not currently classed as seafarers[20].

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[17] Brown et al., 2020, p6
[18] Mission to Seafarers, 2020
[19] UK Government, 2012
[20] Croner, 2022
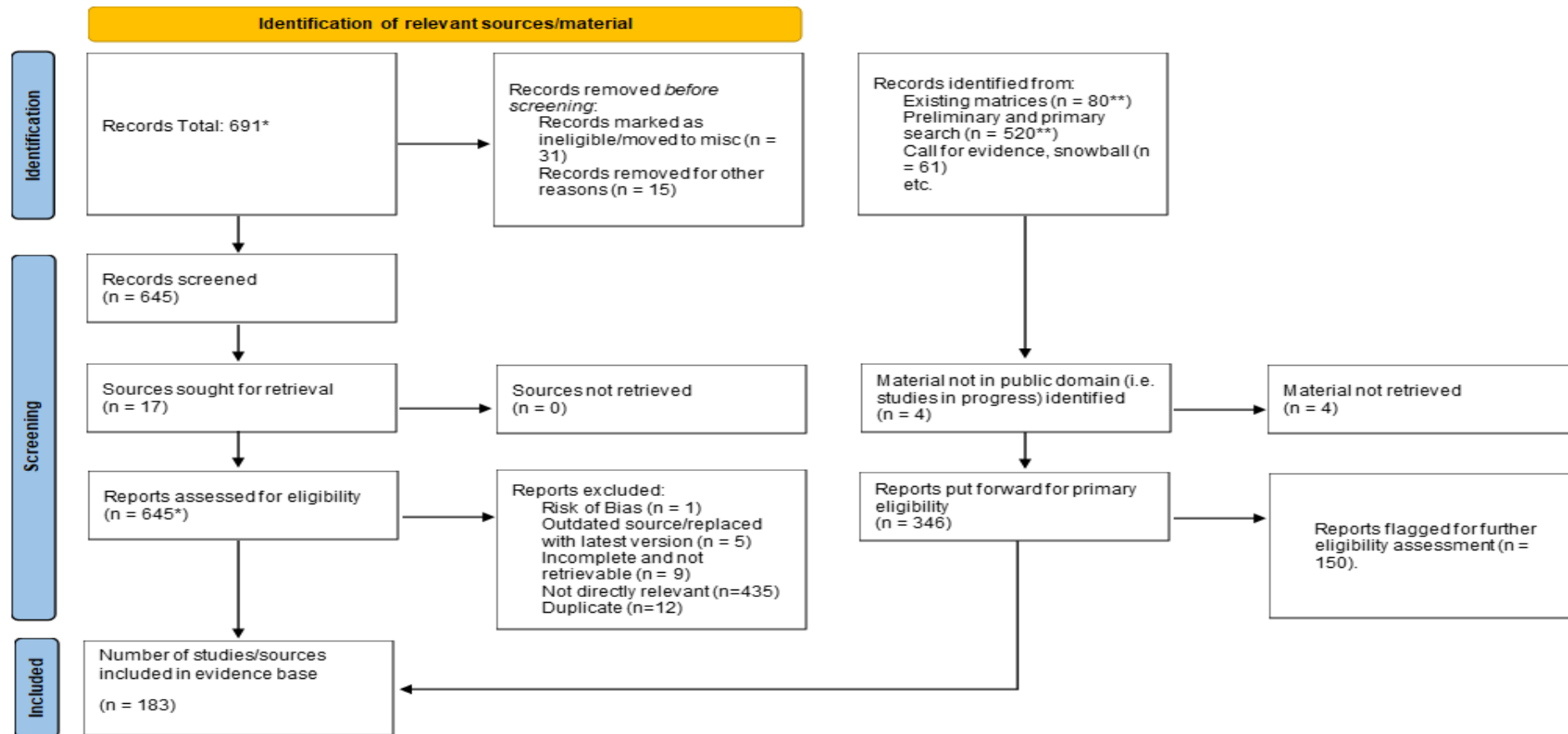
3. **Methodology**

For the purpose of this REA, a range of databases and platforms were searched, applying a series of inclusion and exclusion criteria.

Items were then taken forward for further screening before arriving at a final set of relevant materials. This process is illustrated in the

PRISMA flow chart in table 1 (see page 15 of this document). Full details are provided in the appendix. The searches deployed a variety

of search terms in an iterative fashion, applying a number of inclusion criteria to identify relevant sources:

- Focusing on seafaring/ seafarers, which encompasses all 'employment (other than Crown employment) consisting of the

  performance of duties on a 'ship' or of such duties and others incidental thereto… the term can cover 'not only sailors but also

  anyone whose work is carried out on ships, such as cooks, entertainers and couriers on luxury liners''.[1] Seafaring therefore

  includes all job types within work at sea (i.e. on ships/ boats or connected to a vessel, including fishing, transport, scuba diving,

  the royal fleet auxiliary, Navy/ Marines and submariners)

- Exploring health/wellbeing evidence for the seafarer demographic which can include:

  o Impact of legislation on seafarer health/wellbeing, where the legislation is as a result of considerations for seafarer wellbeing

  o Perceptions of health and wellbeing interventions (e.g. seafarers' perceived training needs)

- o   Leadership/management style as a form of intervention

- o   Health and wellbeing assessment

- o   News articles on particular health/wellbeing initiatives that companies/organisations are taking

- o   Employee-driven strategies for coping/ enhancing health and wellbeing e.g. self-care

- Open and inclusive approach when considering source types i.e. dissertations, media articles, reports, guidance documents, blogs, academic studies, conceptual/theoretical papers, reviews, conference papers etc.

The following exclusion criteria were also used:

- Sources that meet the following exclusion criteria were not be included:

- o   Focusing exclusively on physical safety – which is part of wellbeing, but has not been explicitly aimed at tackling wellbeing

- o   Material on other job functions or role types within the seafaring/maritime/shipping industry, but which are not based offshore e.g. office, warehouse and oil rig workers

- o   Exploring health/wellbeing in general, but not focusing on interventions

Identification of relevant sources/material

Identification

Records Total: 691*

Records removed *before screening*:
Records marked as ineligible/moved to misc (n = 31)
Records removed for other reasons (n = 15)

Records identified from:
Existing matrices (n = 80**)
Preliminary and primary search (n = 520**)
Call for evidence, snowball (n = 61)
etc.

Screening

Records screened (n = 645)

Sources sought for retrieval (n = 17)

Sources not retrieved (n = 0)

Material not in public domain (i.e. studies in progress) identified (n = 4)

Material not retrieved (n = 4)

Reports assessed for eligibility (n = 645*)

Reports excluded:
Risk of Bias (n = 1)
Outdated source/replaced with latest version (n = 5)
Incomplete and not retrievable (n = 9)
Not directly relevant (n=435)
Duplicate (n=12)

Reports put forward for primary eligibility (n = 346)

Reports flagged for further eligibility assessment (n = 150).

Included

Number of studies/sources included in evidence base

(n = 183)

*Approximate - reporting the number of records identified from each search yield would have been too time consuming to capture, instead opting to record only records put forward on the matrix. The total number across all databases/registers were screened as per search process (see Appendix: Methodology).

(Prisma template adapted from: Page et al., 2020)

(Table 1. PRISMA diagram with flowchart of search procedure)

From the 661 sources initially identified as potentially suitable, only 346 were found to meet the criteria for primary eligibility. A further

sifting and categorizing procedure reduced this to the final 183 sources which were included. Of these, 117 items were peer reviewed

material, with the remaining 66 drawn from industry reports and other grey literature (e.g., doctoral theses, blog pieces, media and news

articles, guidance documents etc).

4. Overview of the current evidence base

Based on the items identified within the REA, there are three major areas of substantial evidence around psychological wellbeing in

seafarers. The first is within general approaches to physical health, dealing with well-established topics of concern such as seafarer

fatigue[21], the negative health impacts of shiftwork[22], the role of diet[23] and of exercise[24].

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[21] Including Jepsen et al, 2015, An et al 2022, Kerkamm, 2022
[22] See Institute for Employment Studies, 2020 for example
[23] Hjarnoe & Leppin, 2014, Baygi et al,2021
[24] Trauth, 2021, Jiang et al, 2021

Psychological wellbeing is typically considered as an additional indicator within a range of measures of physical health, rather than as a distinct process. The second area is within general approaches to health promotion, usually in the form of interventions aimed at encouraging healthy lifestyles whilst at sea or in developing awareness of practices that may support better general health[25]. The third is within studies that have specifically focused on mental health and wellbeing. The work often uses models of stress and coping[26] to explore the specific effects on working on vessels on seafarers. It also includes studies which have looked at particular 'extreme events' specific to maritime, such as the effects of being a victim of piracy[27].

The conceptual terms around psychological wellbeing which recur most frequently in the item pool include 'stress' and 'resilience'. The theoretical approaches in which these terms are located include the job demands and resources approach[28], the psychological capital approach[29] and positive psychology[30]. This again mirrors the literature around psychological wellbeing at work more broadly. By definition, these approaches conceptualise mental health and wellbeing as a problem of the relationship between the individual and their environment. As a consequence, the kinds of interventions which can be conceived on the basis of this work are focused on

[25] Grappasonni et al, 2019, Fisk, 2017, Hjarnoe & Leppin, 2013
[26] McVeigh et al, 2021, Harden, et al, 2021, Salazar, 2019
[27] Simon & Fernandez, 2016
[28] Sekhon & Srivastava, 2021
[29] Olaniyan & Hystad, 2016
[30] McVeigh, et al, 2016

supporting individual seafarers through developing different coping strategies or techniques for self-managing their own wellbeing,

rather than exploring structural or systemic features of seafaring.

There are, however, a small number of studies and reviews which offer more systems-level or organizational analyses of seafarer

psychological wellbeing. These focus on broader issues around organizational culture[31], social relations within the maritime sector[32] and

communication whilst at sea[33]. By far the largest component of this work is around the role of leadership in the sector, with a particular

concern with improving the 'soft skills' of ship's masters and senior officers around identifying and managing negative impacts on

mental health and wellbeing. Work in this area typically emphasises the distinction between leadership at sea – where ship's Masters

have traditionally been vested with considerable authority – and leadership within the onshore aspects of the maritime sector. There are

repeated calls for training to facilitate more 'transformative' leadership styles.

The most common interventions described within the evidence base are general health promotion strategies, such as Wellness at Sea[34].

These typically provide a range of coaching services aimed at developing awareness of the holistic nature of wellbeing, coupled with

[31] Lundh & Rydstedt, 2016
[32] Osterman, et al, 2020
[33] Oldenburg et al, 2013
[34] Smith, 2016

external services such as crisis response and/or telephone helplines. There are also more specialised mental health promotion and

support interventions, such as Mentally Health Ships framework[35] and Big White Wall[36]. The focus of these approaches is either to

provide guidance on the core elements required for develop greater awareness of mental health and the areas in which support might

subsequently be offered, or the provision of external expertise along with platforms to moderate peer-to-peer support. These

interventions are either commercial products or involve recourse to paid-for external services. We were unable to identify substantive

evaluation of the effectiveness of many of these general health and mental health promotion strategies. The evaluation of more focused

health promotion schemes normally concludes that any positive effects are marginal and short-lived. There are even instances of

negative outcomes that arise as unanticipated consequences of the interventions.

Specific interventions aimed at supporting psychological wellbeing range across training programmes fostering resilience, short term

counselling sessions, telemedicine and app based digital technologies[37] and meditation and other relaxation or mindfulness

techniques[38]. Uniformly, these interventions have very low sample sizes, normally of around 50 or less participants. Where they are

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[35] Rozanov, 2020
[36] The Seafarer, 2016
[37] Nittari et al, 2019
[38] Sreekumar et al, 2019

conducted, the evaluations of interventions typically do not include a control group arm to the intervention, suffer from very high attrition rates amongst participants and are generally not sustained over time. We were not able to locate any interventions which would meet the stringent criterion of a randomized control trial. The outcomes generally show modest improvements in measures of psychological wellbeing and resilience.

Table 2 lists the different kinds of programmes and specific interventions which are present in the final selection of studies and reviews. The full list of publications identified is contained in appendix 2. Some of these publications report on physical health interventions, but we have included them here because they make reference to psychological wellbeing or mental health. There are six domains around which the studies and reviews can be grouped: physical health, psychological wellbeing, counselling and therapy, training, digital tools and environmental interventions. The diversity of the kinds of interventions within each domain is worthy of note and probably reflects the broad range of approaches and research around psychological wellbeing within the sector. It is also testament to the current lack of consensus around the key mechanisms in mental health. For instance, physical health and environmental interventions address the psychological dimensions of wellbeing in a holistic way, whereas the psychological wellbeing and counselling and therapy approaches

focus on individual capacities, skills and experiences. The training interventions tend to focus on relationships within the workplace, whereas digital tools often take a population level approach in looking for patterns across data aggregated from across the workforce (or alternatively targeting the whole workforce without regard for individual differences between employees). Finally, the variability amongst interventions most likely reflects the tendency for short-term projects which are rarely followed-up and which typically are implemented at relatively small scale. There appears to be preference for producing new and novel interventions rather than systematically refining existing programmes.
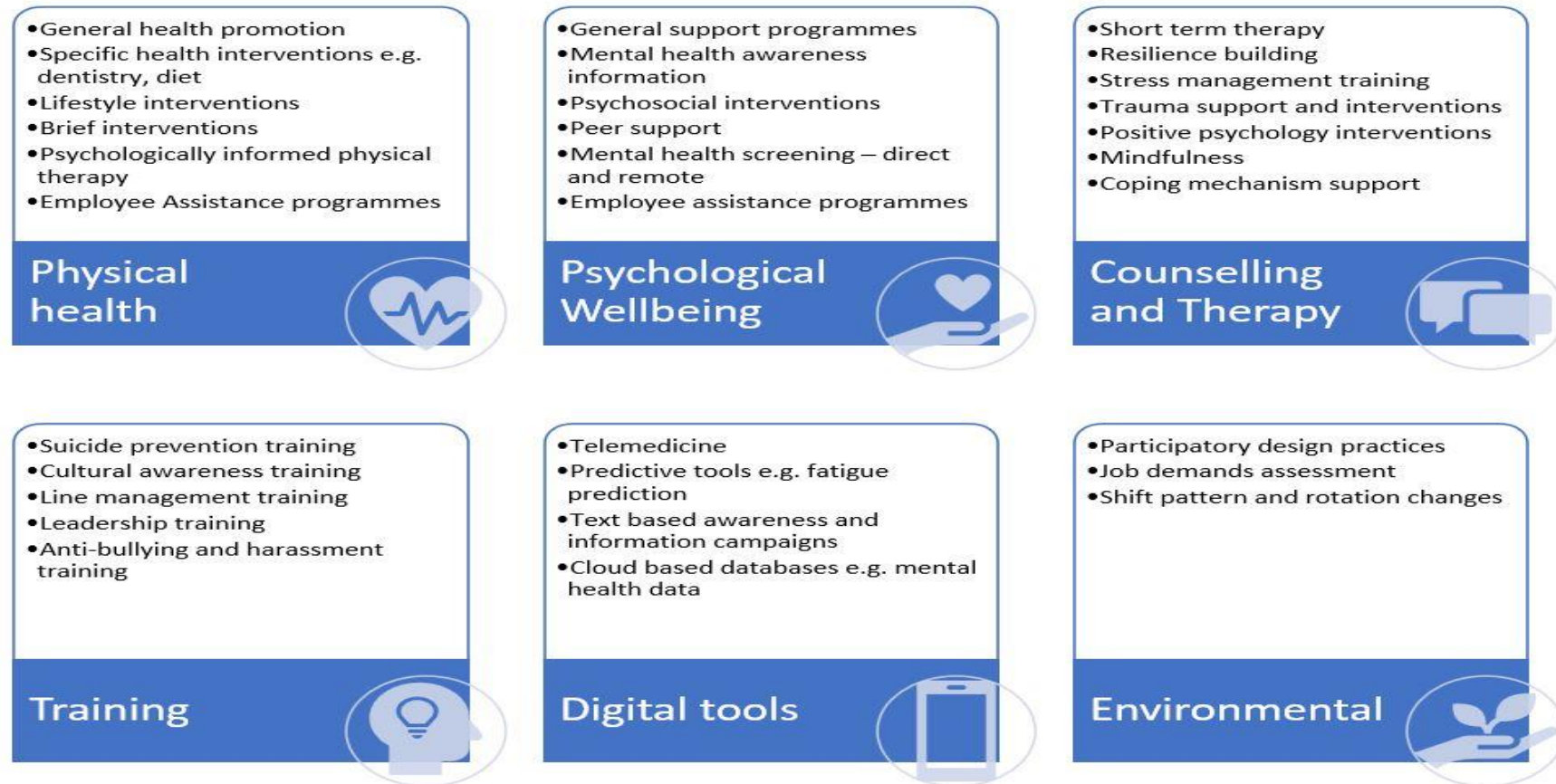
Physical health
- General health promotion
- Specific health interventions e.g. dentistry, diet
- Lifestyle interventions
- Brief interventions
- Psychologically informed physical therapy
- Employee Assistance programmes

Psychological Wellbeing
- General support programmes
- Mental health awareness information
- Psychosocial interventions
- Peer support
- Mental health screening – direct and remote
- Employee assistance programmes

Counselling and Therapy
- Short term therapy
- Resilience building
- Stress management training
- Trauma support and interventions
- Positive psychology interventions
- Mindfulness
- Coping mechanism support

Training
- Suicide prevention training
- Cultural awareness training
- Line management training
- Leadership training
- Anti-bullying and harassment training

Digital tools
- Telemedicine
- Predictive tools e.g. fatigue prediction
- Text based awareness and information campaigns
- Cloud based databases e.g. mental health data

Environmental
- Participatory design practices
- Job demands assessment
- Shift pattern and rotation changes

Table 2. Interventions described in the final selection of studies and reviews from the evidence base

Reflections on the evidence base

The REA results described in this report offer a picture of a field that is highly diverse, with a wide range of topics, populations, cases, approaches, interventions, and methods of evaluation. There is, at present, not only no single framework for understanding mental health and psychological wellbeing amongst seafarers that has demonstrably proved capable of unifying this disparity across studies, but there is moreover no specific approach or intervention which has shown particular promise in comparison with others. Whilst it is a possibility that such a framework or approach does actually exist but is not currently published either in English or in an outlet which is currently discoverable through REA, it is more likely the case that that the field has not yet arrived at work which is capable of being scaled up beyond the particular cases and populations to which it has been targeted. In this final section we offer some reflections on some of the limitations within the existing literature before making some recommendations around how it may still be possible to work with the diverse and partial evidence which currently exists in a different way.

Geographies

The main geographic focus in the final selection of studies and reviews was either Europe or the US but there were substantial amounts of literature from the Philippines and China. Outside of these, papers either covered a range of countries, in which case we considered them as 'international' or did not clearly state their geographical point of reference. The REA was restricted to items published in English,

so there may be bodies of evidence that exist in other languages, although by definition these have not so far impacted upon the

international debates that have been published primarily in English.

Populations

This search focused on a relatively narrow core population of seafarers within the whole maritime sector. However there exists a broad

range of seafarer types found across the literature - this encompassed worker's onboard commercial merchant vessels[39], with a few

onboard fishing[40] and military/naval vessels[41]. There were also those which fell within a grey area (such as studies which viewed

seafaring as a broad demographic[42]) or contained a mixed sample of seafarers including some offshore workers[43]. A small number of

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[39] McVeigh et al, 2019, An, et al, 2020, Graham & Walters, 2021
[40] Barclay, 2015
[41] Hurtado, 2019
[42] For example Carter & Karlshoej, 2017, Baygi, et al 2020, Jepsen & Rasmussen, 2016
[43] Battineni et al, 2020

papers were also found to be based on specific types of seafarers - such as caterers[44], aquaculture workers[45], logistics service workers, and engineers[46].

Study Design Themes

For the greater part, studies tended to employ cross-sectional design (n=54) compared to longitudinal design (n=23). Cross sectional designs present data from multiple sets of measures collected within a single time period and drawing inferences from the relationship between the measures. Longitudinal offer measurements from data collected over longer time periods. This means that there is a comparatively smaller pool of data able to inform analysis on the longer-term effects of working at sea. Given that psychological wellbeing both tends to vary over time and is affected indirectly by a wide range of potential variables, the absence of significant longitudinal data can be viewed as a current major challenge.

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[44] Hjarnoe & Leppin, 2014
[45] Holmen & Thorvaldsen, 2018
[46] Lundh & Rydstedt, 2016

Most of the studies from the final selection used a mixed methods approach (n=27) combining a range of mixed data collection techniques, or quantitative design (mostly survey and questionnaire instruments, n=34). There were a small number of qualitative approaches (n=15), presenting data drawn from methods such as interviews and focus groups. This spread most likely reflects the range of different general approaches to psychological wellbeing in maritime and the lack of a paradigmatic approach to the topic. This broadly mirrors the evidence base around psychological wellbeing in other occupational contexts. We were able to identify a small number of systematic reviews (n=11), which we considered to be the most robust form of evidence available within the existing evidence base. These systematic reviews are quite varied in their focus, ranging from reviews of physical factors relevant to mental health, such as fatigue and sleep[47], to more focused aspects of psychological wellbeing, such as stress and coping[48] plus leadership[49]. The common message across all the systematic reviews is that whilst psychological wellbeing is a significant, longstanding concern, the current evidence base is uneven, lacking in systematicity and that it is extremely difficult to compare individual items of research. There were also a limited number of pieces offering a meta-analysis of existing data (n=6) and a range of items which offered a broad literature or scoping reviews.

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[47] Kerkamm et al, 2022, Asare, et al, 2021
[48] Harden, 2021
[49] Lileikis, 2014

Study Quality

The overall study quality within the final selection from the evidence base was limited by factors commonly associated with small scale research projects. This included limited time frame, restrictive sample (i.e. not representative of full dynamics of the workforce, lacking appreciation for the varied national, origin, cultural, and regional representation), low response rates, lack of control group, inability to recruit randomised sample, unclear findings/further research needed (very few articles offer detailed evaluation and follow up studies were even rarer), lack of/gaps in existing data, reliance on self-reported data, etc. Interventions tended to be limited in scope with no evidence of either a scaling up to a broader population nor of follow-up evaluation.

Limitations of the Evidence Base

Within the final selection, it is acknowledged that there is a 'desire to increase the focus on psychological and physical health', drawing on, gathering, and utilising high-quality data. However, it is equally agreed that there exists 'unmet data needs' at multiple levels which can 'provide the necessary direction' for research into the wellbeing needs of seafarers, with data described as 'fragmented' and lacking

evidence to show that the collection and use of such quality data currently exists[50]. Although there is a growing appreciation for a

holistic view of wellbeing within the evidence base, it is typically stated that there remains a 'general lack of understanding' and

appreciation for wellbeing 'in all its dimensions' (physiological, psychological, social and economic) across the maritime industry.

One key issue may centre around communication regarding the importance of wellbeing. A recent study has indicated a large

discrepancy in terms of levels of awareness between those most impacted (seafarers) and maritime stakeholders - with the latter found

to be more aware of factors which negatively impact seafarer wellbeing, while the majority of the seafarers in the study mentioned

'mostly excessive workload and lack of sleep leading to severe fatigue'[51]. Indeed, the current evidence published within English may

restrict a full appreciation of the many cultural dynamics of the seafaring community, with an overwhelming majority focused on the

global north, with few studies on populations outside of this area. This is problematic, especially when considering the importance of

language/terminology in helping to improve awareness of the psychological dimensions of seafarer wellbeing.

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[50] Bajorek et al., 2021; Abila & Acejo, 2021
[51] Tetemadze, 2022

The literature also supports the notion that there is both ineffective regulatory mechanisms and insufficient support (particularly when it comes to onboard functionality), which can help provide guidance and support for maintaining the mental health of seafarers[52], along with an inability to stand against sub-standard working practices within the industry. We note that across the evidence base that there is very little consistency in how psychological wellbeing is conceptualised and operationalised. The range of topics which are studied is highly diverse as are the samples which are selected – from Welsh fisherman to Filipino merchant vessel crews. This makes it extremely difficult to compare 'like with like'. Whilst there is some fascinating and highly varied work represented within the evidence base, it is not currently possible to generate standards or axioms against which the evidence gathered might be evaluated. Moreover, many of the interventions which are described have been implemented and evaluated in a way that does not allow for general conclusions to be drawn. This means that the few systematic reviews and synthesis documents that are within the pool reflect the problems of the wider field, which Gehrt & Robinson[53] succinctly characterise as a wealth of knowledge which is currently poorly implemented.

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[52] Safety4sea, 2022
[53] Gehrt & Robinson, 2020

Interestingly, there is some indication within the studies and reviews selected that there is some consistency around the kinds of interventions which are preferred by seafarers themselves. When they are consulted, the most favoured area for intervention amongst seafarers is supporting communication with families whilst onboard vessels. The other kinds of interventions which are popular include opportunities for increased physical exercise and greater recreational activities. This suggests that there may be something of a mismatch between how interventions are conceptualised by external stakeholders and shore-based managers and seafarers themselves. Increasing the role of employee voice when designing interventions would seem to be appropriate.

Finally, we would note that the variability within the kinds of methods and approaches used within the field might be considered to be a strength rather than a weakness. Given that psychological wellbeing is a multi-factorial, complex phenomenon, which is critically affected by psychosocial variables and broader social factors such as ethnicity, culture, gender and class, there is a real need for research that is sufficiently detailed to be able to tease apart some of the complex interactions that are in play. There are some very rich and informative pieces of research within the final selected literature which bear extended consideration. However, we suggest that this is best done by a careful comparison between individual cases rather than through applying overarching standards. In this sense, whilst previous systematic reviews and this current rapid evidence assessment are useful in gaining a sense of the diversity of the field, they are limited in their ability to offer details of the specific processes and kinds of interventions which might be suitable for scaling up. One

solution may be to consider different ways in which the existing evidence base might be curated and revisited. Rather than attempt to

generate broad and abstract categories through which to understand seafarer wellbeing – such as 'stress' and 'resilience' – it might be

better to develop ways of identifying similarities and differences in the contextual details of individual cases and use these comparisons

in a generative way to develop conceptual, methodological and practical innovations grounded in the existing evidence base. This might

take the form of directly comparing the specific details of cases outside of the conceptual terms within which they are presented, looking

for processes which can be usefully juxtaposed with one another. This initial comparison might then be elaborated by describing the

common aspects of the processes and developing a shared language that includes both cases. On this basis, it would be possible to

speculatively develop an outline of an intervention that might be implemented around these shared elements before considering the

ways it which would need to be tailored to the specific contexts. The example below illustrates how this method can be applied to two

studies from the final selection.

Example: Comparison of Welsh Fisherman and Chinese Ocean Crews

To illustrate the value of seeking alternative ways of curating the existing evidence base, two very different pieces of work can be compared. *Building resilience in the fishing sector* in Wales is a research and evaluation report sponsored by the Mental Health Foundation that analyses the challenges to psychological wellbeing amongst this group and offers a series of public health recommendations[54]. *The psychological dilemma of Chinese ocean crews* is a study of stress and wellbeing amongst the crew of the Chinese merchant ship 'Snow Dragon'[55]. Initially the two cases could not be more different in terms of industry, geography, culture and practice. But looking closely at the key findings, there are two key areas of overlap. The fishing sector in Wales is in considerable economic decline. The report notes that since much of the prior export trade was to the European Union (around 90%), the sudden interruption of this trade when the UK left the EU made the sector one of the 'net losers' of Brexit. This has left seafarers with considerable psychological uncertainty and frustration at their inability to positively influence national economic and political changes. Chinese ocean crews have similar experiences. Whilst the work they do has always been seen as relatively low status in China, it has been further impacted by the decline in the value of the dollar (which is used for wages) and local inflationary pressures. This has meant that whilst average salaries have increased in China, ocean crews have become 'economic left-behinds', creating stress and 'psychological dilemmas'. Again, part of this stress comes from an inability to influence broader economic forces. The second overlap is

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[54] Homolova et al., 2020
[55] Ling et al, 2020

around age. Older seafarers within the Welsh fishing sector remain committed to the idea of 'fishing as a way of life' despite the profound challenges this brings, whereas younger seafarers are able to consider other career possibilities. The same situation holds with the Chinese crews, with the study identifying older seafarers as particularly at risk because their more complex social relationships and circumstances are difficult to shift in line with the prevailing economic changes, leaving them angry that their psychological issues are not being addressed. Further comparison of these two very different groups and their respective contexts might help to clarify specific processes (for example, how large economic change is perceived and experienced and a specific focus on older workers) and forms of interventions which might be developed to manage and address them (for example, creating channels through which employee voice can be mobilised within wider social and economic debates and developing peer support mechanisms between older employees and dedicated fora within organizations for considering the specific challenges experienced by these groups).

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Appendix: Methodology

The purpose of this Rapid Evidence Assessment has been to provide an overview of the evidence base of material which directly

contributes to the topic of 'what works for wellbeing in maritime' with a key focus on the seafarer demographic. To meet these aims, a

series of initial gateways, databases and search terms were identified. In order to give a fuller picture of the evidence base, it was

decided that the search should encompass academic and grey literature, along with other sources deemed suitable for consideration

(including works-in-progress and unpublished material). As noted by Kaniklidis (2014), multiple databases should be utilised as no

single database can be considered as sufficient for optimal discovery of all highly relevant content on a given topic. An optimal search

process involves 'multiple general search databases' together with specialised and refined collections, with search terms that

are 'executed in a highly articulated form'. This is important, as not only in terms of the different journals which may be indexed, but how

each database may reflect different relevancy algorithms: for example, Google Scholar's proprietary algorithms favour the number of

citations as an important criterion in the initial list of articles it will yield, whilst date is not as important. Other search engines may use

algorithms based on MeSH terms, with the most recent articles reported at the top of the list. The table below lists the sources we used

in our search along with notes on what they offer and their function.

Source	Database/Journal list	Notes
ProQuest	A full breakdown can be found here and further details here	Along with holding one of the largest sources of primary source collections, it is an excellent source for grey lit material from doctoral theses to collaborative/industry research.
SCOPUS	SCOPUS full journal list can be located here	Scopus is the largest abstract and citation database of peer-

		reviewed literature
Google Scholar	Scholar indexes research articles and abstracts from most major academic publishers and repositories worldwide, including both free and subscription sources. To check current coverage of a specific source in Google Scholar, search for a sample of their article titles in quotes.	Collects papers from all over the web including grey literature and non-peer reviewed papers and reports
Web of Science	Here you can search the full 24930 pages of listed journals.	Web of Science is the world's leading scientific citation search and analytical information platform.

Including unpublished works

Drawing on the lessons learned from previous REA's, it was recognised that not all material will be in the public domain (such as intervention approaches and studies which are in the development/proposal stage). It was therefore felt that such material, where relevant, warranted some resource allocation in attempts to retrieve further information (for example via consultation/utilisation of existing academic and industry networks, or where information is provided, contacting authors for discussions on results or concluding information if not immediately forthcoming). Such material was captured within the matrix and highlighted for further investigation. Where appropriate, and to maintain ethical standards, any sources or private information shared was kept in a secure folder on the Nottingham Trent University datastore.

Search terms were initially identified based on previous concept tables from the previous literature reviews conducted on projects on a similar (but broader) REA. This was then refined during a preliminary exercise where a researcher completed a top-line scan of the literature in Google Scholar and using the NTU Library OneSearch (university database – this was later excluded as it would be difficult for those without access to replicate). These were then refined via multiple searches performed as a preliminary search to find keywords that would best help find relevant material. The use of a '*' in particular terms was used to capture all variations of the term within the database (i.e. 'seafaring' or 'seafarer' or 'seafarers'). A copy of the concept table is below:

Concept Table

Search term concept table			
Concept 1 – Intervention	Concept 2 – Wellbeing	Concept 3 – Health and safety	Concept 4 – Industry-specific and wildcard terms
Intervention	Wellbeing	Safety in the workplace	Seafar*
Intervention program*	Mental health	Occupational health	Shipping
Mediation strategy	Wellness	Safety of workers	Maritime
Occupational Health Intervention	Well-being	Worker safety	Navigator
Evaluat*	Mental wellbeing	Workplace safety	Crew

Practice implementation	Mental well-being	Health and safety	Sailor
Training	Stress		Seaman
Health intervention	Burnout		Mariner
Prevention	Occupational stress		Shipper
Program*	Psychological stress		Seagoing
Effect*	Anxiety		
Change	Psychological workload		
Modif*	Strain		
	Self-care		

Inclusion and exclusion parameters

In the event that a search term yielded too many irrelevant results that could be reviewed within the short time span, they were removed for practical reasons, as well as those deemed contrary to the research aim and criteria. Due to language restrictions, priority was given to English language publications (with exceptions made for any seminal works). There was no geographical exclusion. The search initially included publications from the last 10 years across all industries and sectors, on the adult population within the work/employment/organisational context. However, following meetings with the wider project stakeholders, it was decided that resources were best allocated to a narrow focus of material which directly contributed to the topic of what works in wellbeing for seafarers. In instances of a systematic literature review, other avenues of exploration are considered and investigated, - however as part of the REA method, concessions need to be made. In the spirit of the task, it was decided that we should only consider wider material which indirectly informs the topic, where there is a lack of direct material. In this instance, this was not the case. Additionally, where the databases allow a specific date range to be entered, we searched for 01.01.12 until present (other databases only have the 'last 10 years' filter, rather than the ability to enter a specific date range).

Preliminary search

An initial evidence base was provided via a search of matrices from previous REA projects on the subject of wellbeing and safety – here

any relevant material and sources were identified that could be carried over. This also helped to inform aspects of preparation prior to

commencing the preliminary search (such as identifying helpful search terms). Sources were assessed for suitability based on

relevance to the core topic. Further interest material (such as those which researchers thought may indirectly inform the core topic, but

fell outside of the inclusion criteria), as well as ongoing or unpublished material to potentially follow up on, were captured on a further

interest spreadsheet within the REA Matrix.

A preliminary search was undertaken to help refine the search strategy and build on the existing evidence base.

This was conducted across the following platforms and databases:

- Google Scholar

- NTU Onesearch Pro

- Web of Science (Core Collection)

As per Kaniklidis[56], these three platforms were selected for the preliminary search based on providing a broad overview of available

evidence. The result yields for each search term combination attempted per database (see preliminary search yield table below)

provided guided perceptions of which terms were effective. The top line details were captured from any material deemed relevant

(based on our inclusion and exclusion criteria) in a primary evidence spreadsheet in the REA matrix, for later review during the sifting,

sorting and summarising stages.

Date	Database	Search Terms	Yield	Notes
02.03	ProQuest	'interventions' and 'wellbeing' and 'seafarers*'	116	
03.03	Scopus	'interventions' and 'wellbeing' and 'seafarers*'		
23.03	Google Scholar	'interventions' and 'wellbeing' and 'seafarers*'	3820	
03.03	Scopus	'interventions' and 'wellbeing' and 'seafar*'	75	

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[56] Kaniklidis, 2014

03.03	ProQuest	'interventions' and 'wellbeing' and 'seafar*'	163	
03.03	WoS	'interventions' and 'wellbeing' and 'seafar*'	3	
07.04	Google Scholar	'interventions' and 'wellbeing' and 'seafar*'	1230	
03.03	ProQuest	'intervention*' or 'evaluation' and 'mental health' and 'seafar*'	5. **1,966,727**	
03.03	Scopus	'intervention*' or 'evaluation' and 'mental health' and 'seafar*'	6. **0**	
03.03	WoS	'intervention*' or 'evaluation' and 'mental health' and 'seafar*'	978,580	
08.04	Google Scholar	'intervention*' or 'evaluation' and	1230	

		'mental health' and 'seafar*'		
03.03	ProQuest	'practice implementation' AND 'wellbeing' AND 'seafar*'	7. **10 9**	
03.03	Scopus	'practice implementation' AND 'wellbeing' AND 'seafar*'	8. **0**	
03.03	WoS	'practice implementation' AND 'wellbeing' AND 'seafar*'	9. **1**	
23.03	Google Scholar	'practice implementation' AND 'wellbeing' AND 'seafar*'	10. **4, 17 0**	
03.03	ProQuest	'occupational health intervention' AND 'seafar*'	11. **29 3**	
11.04	Google Scholar	'occupational health intervention' AND 'seafar*'	12. **1, 71 0**	

03.03	Google Scholar	'offshore workers and wellbeing interventions'	13.**21 30 0** 14.**21 ,6 00**	
03.03	NTU Library Onesearch pro	'offshore workers and wellbeing interventions'	15.**11 80**	
03.03	WoS	'offshore workers and wellbeing interventions'	16.**2**	
03.03	Scopus	'offshore workers and wellbeing interventions'	17.**20 5**	
03.03	Proquest	'offshore workers and wellbeing interventions'	18.**63 44 3**	
04.03	Scopus	'occupational health intervention' AND 'seafar*'	19.**0**	
04.03	WoS	'occupational health intervention' AND 'seafar*'	20.**15**	

13.03	Google Scholar	'occupational health intervention' AND 'seafar*'	21.**0**	22. **Yielded no results (captured in memos)**
13.03	Google Scholar	occupational health intervention AND seafar*	23.**1710**	
04.03	Scopus	'health intervention*' AND 'crew*'	24.**0**	
04.03	Scopus	'health intervention*' AND 'sailor*'	25.**0**	
04.03	WoS	'health intervention*' AND 'sailor*'	26.**24**	
04.03	ProQuest	'health intervention*' AND 'sailor*'	27.**3,792**	
23.03	Scholar	health intervention*' AND 'sailor*	28.**16,400**	
04.03	WoS	'health intervention*' AND 'crew*'	29.**446**	
21.4	Google Scholar	'health intervention*' AND 'crew*'	30.**994**	

07.03	Scopus	'mental health' and 'interventions' and 'maritime'	31.**12**	
07.03	WoS	'mental health' and 'interventions' and 'maritime'	32.**56**	
07.03	ProQuest	'mental health' and 'interventions' and 'maritime'	33.**2, 067**	
07.03	Scopus	'intervention program*' or 'evaluation' and 'mental health' and 'maritime'	34.**2**	
07.03	ProQuest	'intervention program*' or 'evaluation' and 'mental health' and 'maritime'	35.**948, 596**	
07.03	WoS	'intervention program*' or 'evaluation' and 'mental health' and 'maritime'	246,853	
11.04	Google Scholar	'intervention program*' or 'evaluation' and 'mental health' and 'maritime'	17,200	

07.03	Scopus	'shipping industry' and 'wellbeing' or 'well-being' and 'intervention'	3	
08.03	ProQuest	'intervention*' and 'well-being' or 'wellbeing' and 'maritime'	36.**220, 543**	
08.03	WoS	'intervention*' and 'well-being' or 'wellbeing' and 'maritime'	22,524	
08.03	Scopus	'intervention*' and 'well-being' or 'wellbeing' and 'maritime'	0	
13.03	Google Scholar	'intervention*' and 'well-being' or 'wellbeing' and 'maritime'	6,810	
08.03	ProQuest	'intervention*' or 'evaluation' and 'mental health' and 'maritime'	37.**6, 046, 305**	

09.03	WoS	'intervention*' or 'evaluation' and 'mental health' and 'maritime'	981,092	
09.03	Scopus	'intervention*' or 'evaluation' and 'mental health' and 'maritime'	8	
14.03	Google Scholar	'intervention*' or 'evaluation' and 'mental health' and 'maritime'	17,600	
09.03	ProQuest	'Intervention program*' or 'evaluation' and 'mental health' and 'maritime'	38.**2,470,860**	
09.03	WoS	'Intervention program*' or 'evaluation' and 'mental health' and 'maritime'	248,173	
09.03	Scopus	'intervention program*' or 'evaluation' and 'mental health' and 'maritime'	2	

15.04	Google Scholar	'intervention program*' or 'evaluation' and 'mental health' and 'maritime'	17,000	
10.03	ProQuest	'shipping industry' and 'wellbeing' or 'well-being' and 'intervention'	39.**523, 912**	
10.03	WoS	'shipping industry' and 'wellbeing' or 'well-being' and 'intervention'	21,836	
10.03	Scopus	'shipping industry' and 'wellbeing' or 'well-being' and 'intervention'	3	
15.04	Google Scholar	'shipping industry' and 'wellbeing' or 'well-being' and 'intervention'	17,800	
10.03	ProQuest	'mental wellbeing' and 'training' and 'seafar*'	40.**2, 538**	
14.03	WoS	'mental wellbeing' and	41.**3**	

		'training' and 'seafar*'		
14.03	Scopus	'mental wellbeing' and 'training' and 'seafar*'	42.**0**	
19.04	Google Scholar	'mental wellbeing' and 'training' and 'seafar*'	43.**1, 330**	
14.03	ProQuest	well-being and mariner and evaluat*	44.**5, 769**	
14.03	WoS	well-being and mariner and evaluat*	45.**1**	
14.03	Scopus	well-being and mariner and evaluat*	46.**0**	
21.04	Google Scholar	well-being and mariner and evaluat*	47.**4, 430**	
14.03	ProQuest	well-being and mariner and effect*	48.**9, 323**	
14.03	WoS	well-being and mariner and effect*	49.**1**	
14.03	Scopus	well-being and mariner and effect*	50.**2**	

21.04	Google Scholar	well-being and mariner and effect*	51.**11,000**	
14.03	Scopus	well-being and sailor and intervention	52.**1**	
14.03	WoS	well-being and sailor and intervention	53.**1**	
14.03	ProQuest	well-being and sailor and intervention	54.**9,714**	
22.04	Google Scholar	well-being and sailor and intervention	55.**17,300**	
14.03	WoS	'occupational health intervention' AND 'maritime'	56.**44**	
14.03	Scopus	'occupational health intervention' AND 'maritime'	57.**22**	
14.03	Proquest	'occupational health intervention' AND 'maritime'	58.**12,598**	

22.04	Google Scholar	'occupational health intervention' AND 'maritime'	59.**17**	
15.03	ProQuest	'practice implementation' AND 'wellbeing AND 'maritime'	60.**14 ,6 86**	
15.03	WoS	'practice implementation' AND 'wellbeing AND 'maritime'	61.**1**	
15.03	Scopus	'practice implementation' AND 'wellbeing AND 'maritime'	62.**1**	
21.04	Google Scholar	'practice implementation' AND 'wellbeing AND 'maritime'	63.**97**	

Preliminary search

The evidence matrix captured details of each source that had been adapted from the previous project matrices: author/organisation;

title/source reference; journal/publication title or website; year of publication/last updated; URL/source link; source type; geographical

areas; sector; population/sample description; industry function; summary/main findings; effect/impact; limitations; additional notes; and grading criteria.

Duplication of material that had already been captured within previous REA research on the subject of wellbeing[57] was avoided by pulling any relevant sources into the new REA Matrix. When populating the matrix, further attempts to avoid duplication of material from searches were made by checking titles against what had already been captured. During the preliminary search, a total of approximately 63 potential sources on health and well-being interventions were found across the previous LRF project evidence matrices, databases and search engines listed. An additional 83 papers on other well-being or H&S literature were captured in the 'further interest material' tab in the evidence matrix.

Primary Search

We began with a preliminary evidence base of 34 sources which met our criteria.

The primary search was conducted across the following platforms:

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[57] Brown et al., 2020; 2022   `

- Web of Science ('All databases' search)

- ProQuest

- Scopus

These platforms were selected based according to best resource allocation and project needs and were based on regular discussions between stakeholders on ensuring thorough coverage of the topic while avoiding duplication of sources across databases/waste of resource. Duplication of material captured was avoided by checking whether new sources already existed within the matrix, from the preliminary search. Searches were repeated through Google Scholar as a sweeping function to minimise risk of missing other relevant sources. Search terms were selected based on those that gained the highest result yields in the preliminary search. Some further refining of the search terms took place, where reviewers also applied their own judgement on alternative search term combinations that were not tried in the preliminary search but would be worth attempting (for example in instances where a search term produced extremely low or extremely high [but mostly irrelevant] yields).

Inclusion/exclusion parameters

Inclusion and exclusion criteria were developed during ongoing meetings and feedback between all key research stakeholders. These

were then further refined during discussions between reviewers via the primary search process. It was agreed to include the following types of material:

- on practices that have emerged as affecting seafarer health and wellbeing, but are not necessarily examined by the source as an intervention

- on the impact of legislation on seafarer health and wellbeing, where the legislation is as a result of considerations for seafarer wellbeing

- on perceptions of health and wellbeing interventions e.g. seafarers' perceived training needs

- on leadership/ management style as a form of intervention

- Navy studies (but not general military studies where it is unclear if the population includes seafarers)

- on submariners, as they form part of the seafaring group and would arguably experience an intensification of common issues compared to counterparts on other vessel types

- on health and wellbeing assessment, which could be an indirect form of intervention, plus includes the element of evaluation (e.g. Assessment could be used to obtain baseline data on workers' wellbeing, which can then inform which interventions would be most suitable)

- news articles on particular health and wellbeing initiatives that companies are taking

71

- on employee-driven strategies for coping/ enhancing health and wellbeing e.g. self-care

The following types of material were captured in the 'Misc/ further interest' tab in the matrix:

- on the impact of technology on health and wellbeing (not as an intervention)

- on the impact of working conditions on health and wellbeing

- on Mental Workload in maritime, which is a performance measurement that could possibly be applicable to wellbeing

- on military veterans

Further Appraisal/categorisation criteria

The same categorisation criteria and sub-criteria to assess relevance of the sources that were developed in the preliminary search were applied in the primary search stages. Sources from the preliminary search that had been identified as relevant to the primary search were not appraised for a second time at this stage, but any gaps in the details were captured in the matrix. Again, unless explicit impact was mentioned within the source (e.g. findings were presented to government/ informed decision-makers), it was agreed not to capture it as an effect/ impact of the source (i.e. ambitions/none verified implications of study do not count).

As an additional step, during the *sifting, sorting, and summarising* it was decided that further evaluation could be conducted by doing deeper checks within the source to capture any additional details – for example in instances of further evaluation, this could only be

captured where explicitly stated as a follow-up study or extension of the data. Any other relevant papers conducted by the same authors were noted for further interest and checked.

Synthesising and categorising the evidence

Once satisfied that the primary search functions were no longer yielding any further relevant material (and where the search terms were deemed to only be returning the same sources), a final quality appraisal/screening exercise was undertaken to sift out any material which was not deemed appropriate to the objectives of the study. This stemmed from the sources captured on the matrix, guided by our inclusion and exclusion criteria and regular team meetings between the research team. It also provided an opportunity to rigorously examine the material captured in the further interest spreadsheet, including material from unpublished works and responses to calls for evidence.

To meet the core aim of this project and grant an overview of the evidence base, the final step involved a stringent sorting exercise. This meant categorising each piece appropriately, and this was done with the following in mind:

- ➢ Relevance

- ➢ Type of source

- ➢ Method/framework

➢ Limitations and risk of Bias

   - What limitations were present

      - What sources of bias could have been introduced

➢ How the study informs/benefits/increases the knowledge base, and inform future work and decision making?

In order to begin answering our broader research objectives further interrogation of the literature was undertaken to ascertain:

➢ What methods are most commonly used in previous studies?

➢ What are the most common outcomes/conclusions?

➢ What are the significant points of interest throughout the literature/sources captured?

➢ What further considerations could be made of limitations/bias within the review?

➢ What are some of the possible implications of current study design/methods?

➢ What are the key limitations and risks of bias present in the existing evidence base?

➢ What are the current gaps in research?

➢ Is there evidence of demand which can help inform priorities for future research?

This section outlines our search process, followed by a discussion of the main findings from the REA, including key characteristics from the primary evidence base, along with reoccurring themes:

To achieve the study aims, and in order to best utilise the limited resources commonly associated with REAs, the research is primarily concerned with material that can be considered *directly relevant* to the topic of 'what works for wellbeing in seafaring'. As such, due focus was given to material which can be said to contribute to the evidence base via direct exploration of this topic (i.e. a systematic literature review looking at wellbeing interventions for seafarers; an article which reviews the impact of on-board management techniques on seafarer wellbeing, and so on). It was also appreciated that there may be material which indirectly explores some of the subtopics around this core theme (for example the stigma of whistleblowing in maritime). In such instances, this was captured in a 'Misc and further interest' spreadsheet, within an REA evidence Matrix.

Platforms and Databases used in the search:

- Web of Science (core collection)
- ProQuest
- Scopus

Search engine used as sweeping function:

- Google Scholar

Author/ Organisation	Title/Source reference	Journal/publication title or website	Year of publication/ last updated	URL/Source Link	Source type	Geographical Areas	Sector
Connie Gehrt and Georgina J Robinson	Wellbeing at Sea : A Pocket Guide for Seafarers	Maritime & Coastguard Agency	2020	https://www.proquest.com/docview/2407370816/DB6C33D67917481BPQ/4?accountid=14693	Guidance doc	UK	Seafaring
Carter, Tim; Karlshoej, Kimberly.	The design of health promotion strategies for seafarers	International Maritime Health	2017	https://www.proquest.com/docview/2464222706/B8A0D43D2D05448DPQ/4?accountid=2182	Journal article	International	Seafaring
Baygi, Fereshteh; Djalalinia, Shirin; Qorbani, Mostafa; Dejman, Masoumeh; Nielsen, Jesper Bo.	Lifestyle interventions in the maritime settings: a systematic review	Environmental Health and Preventive Medicine	2020	https://www.proquest.com/docview/2546852101/B8A0D43D2D05448DPQ/8?accountid=2182	Research Report	International	Maritime
Georgieva, Despina	Increase of the crew's well-being and reduction of stress	Scientific Bulletin of Naval Academy	2019	https://www.proquest.com/docview/2275042836/2E17D8E0344341FDPQ/15?accountid=2182	Article	N/A	Seafaring

(Sample from REA Matrix)

Throughout the search process, the team would take notes of their reflections, queries and points of interest to discuss with the other reviewers. This was logged in an 'SML Memos' document (sample below), meaning that comments could be reviewed and responded to by the other team members in between regular team meetings. The reviewing team met weekly to discuss their progress on the search and points that need clarification, such as whether particular sources meet the inclusion criteria. This ensured a collective approach to data gathering rather than a heavy reliance on single subjective understanding and helping to reduce elements of concern such as risk of bias.

24.03 - RA2 - feedback on RA4' practice additions to matrix:

- Effect/impact can be noted as 'none stated'
- Paper in row 147: this can be noted as longitudinal (in additional notes, for reference on sub-criteria to further evaluate the quality) – as fieldwork was conducted over several years with follow-ups. Can also add in additional notes that this paper explores the impact of legislation. It would be useful to note how the follow-ups were conducted/analysed
- Paper in row 148: again, note that this focuses on the impact of legislation.

05.04 - RA4

- I used research questions as a guidance to decide if an article is meeting criteria. If the abstract is inconclusive, I check the whole article and do a word search of 'wellbeing' and see if it matches with criteria. If I haven't got access to material Google Scholar search e.g. book or book chapter, I do another search in Google to find access through the publisher and then check if material is relevant.

06.04 - RA3

- Following the induction talk with RA1 and RA7, we realised that the algorithm in Google Scholar might differ depending on who makes the search, at least displaying results in a different order. Indeed, when opening a link shared by RA7 of a specific page for their search, the results displayed on my side after opening the link differed from theirs.

(Example of memos document entry)

Sifting sorting and categorising the evidence

The purpose of this stage was to identify relevant evidence sources from the databases based on the inclusion/ exclusion criteria, which was a collectively refined process and was based on the principle of being 'rapid' (i.e. to yield as many relevant results as possible within a short timeframe, rather than spending too long screening multiple pages of databases). The team regularly consulted to agree what is understood by/what was meant as evidence which was considered 'directly/indirectly relevant', plus additional areas considered necessary for ongoing evaluation, such as at which point particular search term combinations could be abandoned.

Each search term combination and yield were captured in a search yield table (example below – see appendix/method supplement for full version). If the yield was deemed 'unusually high', the reviewer would add a justification in the 'Notes' column explaining actions they had taken (i.e. if the results were not reviewed, and a different search term combination was attempted instead).

Date	Database	Search Terms	Yield	Notes
02.03	ProQuest	'interventions' and 'wellbeing' and 'seafarers*'	116	
03.03	Scopus	'interventions' and	0	None found –

		'wellbeing' and 'seafarers*'		see memos
03.03	Scopus	'interventions' and 'wellbeing' and 'seafar*'	75	
03.03	ProQue st	'interventions' and 'wellbeing' and 'seafar*'	163	
03.03	Web of Science	'interventions' and 'wellbeing' and 'seafar*'	3	

(Search yield table example – see methods section for full version)

In the event of exhausting a search term (i.e., where no directly relevant material appeared for several pages, or if only replicated articles that had already been captured were appearing) reviewers would log this in the memos and move on to a new search. Sources which met the inclusion criteria were captured in the primary tab on the matrix, applying a search for the source title/ authors to avoid replication of entries.

The data captured included the top-line details of the source, such as:

- o   Author/organisation

- o   Title/source reference

- o   Journal/publication title or website

- o Year of publication/last updated

- o URL/source link

- o Source type

- o Geographical areas

- o Sector

- o Design and population/sample description

- o Industry function (for example, off-shore/ on-shore and off-shore)

- o Summary/main findings

- o Additional notes of interest

Where any of the above information was not explicitly stated or unclear in the source, this was also captured.

The final stage of the search included a sifting, sorting, and categorising of the data. In order to gain collective agreement among members of the review team and ensure that each of the gathered evidence sources meets the inclusion criteria, sources that are

confirmed to be relevant were then assessed for relevance to the study. Each reviewer checked a set of sources captured in the matrix in order to confirm agreement that they meet the inclusion criteria for relevance. Any sources not deemed relevant, were moved accordingly. In instances where the reviewer was uncertain or felt that a captured source required further review, items were flagged, a memo was made, and this was discussed collectively at the next review meeting.

Appendix: Intervention Literature Table

Author	Year	Journal	Title	URL/Source Link	Summary
Baygi, F.; Djalalinia, S.; Qorbani, M.; Dejman, M.; Nielsen, J.	2020	Environmental Health and Preventive Medicine	Lifestyle interventions in the maritime settings: a systematic review	https://www.proquest.com/docview/2546852101/B8A0D43D2D05448DPQ/8?accountid=2182	Results of this systematic review show that a limited number of studies of lifestyle interventions in the maritime setting exist and that the quality of them is generally modest. Also, most of the interventions identified have failed to demonstrate substantial health benefits for seafarers.
Carter, T.; Karlshoej, K.	2017	International Maritime Health	The design of health promotion strategies for seafarers	https://www.proquest.com/docview/2464222706/B8A0D43D2D05448DPQ/4?accountid=2182	States that: 1. Interventions to promote seafarer health have a long history but have been poorly co-ordinated and their effectiveness has not been established. 2. There has been little or no interaction between those developing seafarer initiatives and those with onshore expertise in health promotion. 3. There is a large amount of knowledge and experience about onshore health promotion theory and practice that is applicable to seafarers and could be useful in the development of future interventions. 4. The pattern of work and life at sea and on leave, the global recruitment of seafarers and the structure of

| | | | | | employment in the sector pose challenges to successful implementation of health promoting initiatives. 5. Points 1–4 need to be considered and addressed by those with relevant expertise in order to improve the promotion of seafarer health and wellbeing in the future. 6. The right mix of specialist expertise coupled with commitment from those who have responsibilities for the employment of seafarers needs to be harnessed to produce a widely accepted set of priorities for action and for the delivery of programmes based on them. |
| Hjarnoe, L.; Leppin, A. | 2014 | International Maritime Health | What does it take to get a healthy diet at sea? A maritime study of the challenges of promoting a healthy lifestyle at the workplace at sea | https://www.proquest.com/docview/2464220329/5CFC3F1D1C854D39PQ/26?accountid=2182 | Participants reported positive opinions about the course and subsequent changes in promoting a nutritious and healthy diet at sea by way of health education. Also, a significant change was found in the seafarers' self-reported eating behaviour from T1 to T2. However, several challenges were identified during the transfer and maintenance phase such as many cooks having received little or no prior training which limited their cooking abilities. Confined physical capacities on board, restricted space for storage and lack of proper equipment were other barriers and so were low frequency of supply options and high prices for fresh fruit and vegetables. Conclusions: To fully realise the benefits of the changes, these challenges related to the specific maritime workplace setting need to be acknowledged and addressed at management level. |

Battineni, G.; Di Canio, M.; Chintalapudi, N.; Amenta, F.; Nittari, G.	2019	International Maritime Health	Development of physical training smartphone application to maintain fitness levels in seafarers	https://www.proquest.com/docview/2464220817/5CFC3F1D1C854D39PQ/50?accountid=2182	This app is made for planning a quality physical activity program for seamen that allows a seafarer to choose the adequate activity in line with his physical characteristic, fitness level, and motivations.
Sanden, S.; Johnsen, B.; Eid, J.; Sommerfelt-Pettersen, J.; Koefoed, V.	2014	International Maritime Health	Mental readiness for maritime international operation: procedures developed by Norwegian navy	https://www.proquest.com/docview/2464220254/5CFC3F1D1C854D39PQ/57?accountid=2182	The program utilised by the Royal Norwegian Navy is extensive and not immediately applicable to civilian maritime companies. However, elements of this program could be used with limited resources. Questionnaire based screening, before, during and at the end of a contract period could result in early detections of mental health problems and increased retaining of personnel. This should be done by health professionals. Early targeting of at-risk personnel could prevent serious costs for the individual as well as the company.

Jepsen, J.; Rasmussen, H.	2016	International Maritime Health	The metabolic syndrome among Danish seafarers: a follow-up study	https://www.proquest.com/docview/2464220602/EA3F73FCC5DB4D18PQ/36?accountid=2182	In spite of the intervention, the prevalence of MS increased in this group of seafarers. The applied individual intervention for mitigation of MS was clearly insufficient. Collective interventions should be applied in the shipping industry.
Baygi, F.; Mohammadi-Nasrabadi, F.; Birgit-Christiane Z.; Jensen, O.; Bygvraa, D.	2021	BMC Public Health	Global overview of dietary outcomes and dietary intake assessment methods in maritime settings: a systematic review	https://www.proquest.com/docview/2574441110/EA3F73FCC5DB4D18PQ/92?accountid=2182	Access to meat, processed meat and egg, frozen and canned food items, sugary drinks, alcohol, greasy and salty food was high. In contrast, consumption of fruit, vegetables, dairy products, and cereals was lower than recommended. Conclusions: Eating habits and dietary intakes in maritime settings are unhealthy. Subjective dietary assessment methods combining menu analysis with new technologies (e.g., mobile-based) might be an applicable method in this hard-to-reach setting which is the vessels.

Heydari, E.; Dehdari, T.; Solhi, M.	2021	BMC Public Health	Can adopting skin cancer preventive behaviours among seafarers be increased via a theory-based mobile phone-based text message intervention? A randomized clinical trial	https://www.webofscience.com/wos/woscc/full-record/WOS:000610513900002	The results of the study indicated the effectiveness of mobile phone-based text message intervention for increasing skin cancer preventive behaviours in Iranian seafarers.
Wang, G.; Li, W.; Liu, Y.; Chen, X.; Huang, J.; Zhao, Y.; Wu, Y.; Wang, D.	2016	INTERNATIONAL JOURNAL OF CLINICAL AND EXPERIMENTAL MEDICINE	Efficacy of dental health education and a novel mouthwash on periodontal health of navy personnel on a long ocean-going training mission	https://www.webofscience.com/wos/woscc/full-record/WOS:000385837700200	Long seafaring mission adversely impacts the periodontal health of sailors and pre-voyage dental health education and the use of mouthwash during seafaring prevents decline in periodontal health in seafarers.

| Schmied, E.; Harrison, E.; Dell'Acqua, R.; Perez, V.; Glickman, G.; Hurtado, S. | 2021 | Military Medicine | A Qualitative Examination of Factors That Influence Sleep Among Shipboard Sailors | https://drive.google.com/file/d/1cjG1MlcWvcOFqBWz5BM5AdSgtMVyDGGB/view | Many participants did not report using any specific strategies to improve their sleep while underway. Among those who did, most described mitigating environmental barriers (e.g., noise-cancelling headphones or sleep masks). However, some participants also acknowledged these strategies are not always feasible, either attributable to cost or because sailors must be able to respond to alarms or commands. Notably, few sailors reported using stress mitigation or relaxation strategies to help sleep. Ingesting caffeine was the only strategy sailors reported using to alert themselves while fatigued.

The study concludes that service members reported many unique barriers to sleep in the shipboard environment, yet many did not report the use of strategies to mitigate them. Further, few used alerting techniques when fatigued. This at-risk population could benefit from targeted educational interventions on sleep-promoting behaviours, prioritization of sleep, and fatigue mitigation. |

Udell, C.; Ruddy, J.; Procento, P.	2018	MILITARY MEDICINE	Effectiveness of Acceptance and Commitment Therapy in Increasing Resilience and Reducing Attrition of Injured US Navy Recruits	https://www.webofscience.com/wos/woscc/full-record/WOS:000443018900055	Results supported the use of this program for helping recruits recover from injuries and successfully pass physical training requirements for graduation.
Rozanov, V.	2020	International Maritime Health	Mental health problems and suicide in the younger generation — implications for prevention in the Navy and merchant fleet	https://www.proquest.com/docview/2464222771/25BDB87A23624A4APQ/277?accountid=2182	Better education of the whole personnel and "healthy ship" approach (better recognition of the crew members' needs, attention to mental health problems, nutrition, physical activity, etc.) may be applied both for the Navy and merchant fleet.

Vyas, K.; Fesperman, S.; Nebeker, B.; Gerard, S.; Boyd, N.; Delaney, E.; Webb-Murphy, J.; Johnston, S.	2016	Military Medicine	Preventing PTSD and Depression and Reducing Health Care Costs in the Military: A Call for Building Resilience Among Service Members	https://www.proquest.com/docview/1827604063/25BDB87A23624A4APQ/280?accountid=2182	Increasing resilience across services by 20% is estimated to reduce the odds of developing PTSD, depression, and comorbid PTSD and depression. Psychological resilience is more than just the absence of mental health problems; it should be understood as a strength-based construct, composed of such measures as wellbeing, positive affect, self-regulation, and mindfulness. However, existing resilience training programs in the military place significant emphasis on mental health, as opposed to providing a holistic and comprehensive intervention that also addresses physical, spiritual, and social content. Moreover, empirical evidence supporting the effectiveness of these programs in military samples is promising but limited.
Lee A.; Sikka N.; O'Connell F.; Dyer A.; Boniface K.; Betz J.	2015	International Maritime Health	Tele-psychiatric assessment of a mariner expressing suicidal ideation	https://bit.ly/3zqSiXR	As a result of this intervention, telemedicine providers initiated psychiatric stabilisation while the mariner was still aboard the vessel, determined that he was safe for repatriation under the care of qualified medical escorts, and facilitated admission to a psychiatric facility near his home in the United States. Mental health emergencies are a significant cause of morbidity and mortality among mariners. Telepsychiatry is a validated method of establishing a psychiatric diagnosis and disposition as well as assessing risk of suicidality and the potential for violent decompensation. It has the potential to be a valuable adjunct to any traditional maritime telemedicine service.

Carotenuto A.; Molino I.; Fasanaro A.M.; Amenta F.	2012	International Maritime Health	Psychological stress in seafarers: a review	https://bit.ly/3Ba6Mg2	Information on known stress factors on board should be provided to seafarers to help them in lowering stress perception. Strategies for coping with "inevitable" stress conditions should also be investigated and developed. Strategies to decrease risks of stress should be directed to the different categories of seafarers, and the results of specific interventions should be evaluated.
Pocock, N.; Nguyen, L.; Lucero-Prisno III, D.; Zimmerman, C.; Oram, S.	2018	Global Health Research and Policy	Occupational, physical, sexual, and mental health and violence among migrant and trafficked commercial fishers and seafarers from the Greater Mekong Subregion (GMS): systematic review	https://www.proquest.com/docview/2547567662/E1A3E6318D424BF0PQ/24?accountid=2182	We found just one work safety intervention study and inconclusive evidence for differences in the outcomes by nationality. One study reported greater descriptive/unadjusted improvements in AIDS knowledge and condom use among migrant Cambodian fishers than for Burmese fishers in Thailand following community-based awareness raising interventions. Formative and pilot intervention research on occupational, physical and mental health among GMS commercial fishers and seafarers is needed.

Dimitrevich, A.; Seyle, D.	2022	Handbook of Research on the Future of the Maritime Industry	Before, During, and After: Systematic Approaches to Trauma Support in Seafarers	https://www.igi-global.com/chapter/before-during-and-after/300474	The authors will introduce the "Before, During, and After" model for seafarer support that provides a framework that shipowners, manning agencies, seafarers, and seafarer support organizations can use to develop tools for reducing the likelihood of significant or lasting distress.
Boulos, D.; Zamorski, M.	2016	Occupational and Environmental Medicine	Potentially modifiable risk factors for mental health problems in deployed UK maritime forces	https://www.proquest.com/docview/1781254414/90721591D1A347B3PQ/10?accountid=2182	Whybrow et al 1 have documented a surprisingly high prevalence of MHPs in Royal Navy personnel deployed at sea on missions with low exposure to traumatic stress, highlighting the role of non-traumatic workplace stressors in this environment. The strongest modifiable risk factors were leadership, morale, and cohesion, which point towards the potential benefits of organisational interventions targeting leader behaviours.

INTERTANKO	2021	INTERTANKO Report	Crew Welfare Management and Mental Wellness (2nd Ed)	https://wwwcdn.imo.org/localresources/en/MediaCentre/HotTopics/Documents/2021_Crew%20Welfare_Management_and%20Mental_Wellness_2nd-ed-web_2.pdf	The report exposes seafarers' psychological issues esp. in times of COVID (anxiety, depression, loneliness, uncertainty, low mood), which can lead to potential physical risk (incl. immune system). Report offers practical recommendations for onshore staff to manage offshore teams: effective and timely communication, look out, reach out, led by example, highlight Employee Assistance Programme, reduce job demand (e.g. workload) increase job resources (salary, relaxation time, internet data, wellbeing support). Overall need to provide emotional and psychological support.
IMO	2020	IMO	Supporting seafarers on the frontline of COVID-19	https://www.imo.org/en/MediaCentre/HotTopics/Pages/Support-for-seafarers-during-COVID-19.aspx	Highlights many of the issues faced by seafarers during the initial waves of the pandemic. Goes on to highlight some of the interventions launched 'successfully' by the IMO. Holds some interesting individual cases.

Institute for Employment Studies	2020	Institute for Employment Studies	The journey from health and safety to healthy and safe	https://www.shell.com/business-customers/trading-and-supply/trading/news-and-media-releases/journey-to-health-and-safety-to-healthy-and-safe-report.html	Findings indicated 5 main themes as having strongest influence: - Fatigue was commonly cited both as part of a causal chain leading to an adverse event/ injury and as an outcome of other factors e.g. noise. Fatigue often emerged in relation to long working hours, shift work etc. - The nature of the work environment e.g. quality of food, length of deployment etc. - The nature of the role e.g. autonomy, workload, job satisfaction - Socialisation including the culture and openness of communication on board; cross-cultural differences etc. - Leadership
Fisk, M.	2017	International maritime health	The health behaviour and wellbeing of older seafarers on Merseyside - indicated changes through brief interventions	https://bit.ly/3yZ2MfA	An important outcome was the indicated benefits of the brief interventions for self-reported wellbeing, though not statistically significant at the 95% level of confidence. Endeavours within the project to reach some of those who could benefit from the brief interventions were successful. Just over half changed their behaviours or were thinking of so doing. Wellbeing gains arising were indicated.

Mittal, M.; Battineni, G.; Goyal, L.; Chhetri, B.; Oberoi, S.; Chintalapudi, N.; Amenta, F.	2020	International maritime health	Cloud-based framework to mitigate the impact of COVID-19 on seafarers' mental health	https://bit.ly/3 b4bwZH	This framework model has been designed with the integration of both cloud and artificial intelligence technologies. The database of incident management system collects the local data of mental and physical states of onboard isolated (or quarantined) seafarers by COVID-19. The seafarer can be registered into the given application and record the parameters (i.e., body temperature, pulse rate, body mass index, blood pressure, heart rate, etc.) to monitor regular health conditions. When an onboard person feels that he/she got a sudden hike in body temperature, or having breathing issues, smart phone application alerts the seafarer and makes an immediate appointment by contacting the emergency centre. The incident management system always records the number of infected people in a particular ship and shares the daily effective infection rates with ship authorities.
Jensen, H.; Oldenburg, M.	2020	International maritime health	Training seafarers to deal with multicultural crew members and stress on board	https://bit.ly/3z 2IUrK	Subjectively, the Europeans questioned were significantly more likely to experience mental stress on board than the Southeast Asians (74.2% vs. 56.3%), whereas the latter were more prone to being physically stressed. 43.1% of the Southeast Asian seafarers often felt lonely on board compared with 26.2% of the Europeans. In view of the many psychophysical stressors in daily life on a ship and the lacking respective education, it is recommended to integrate stress management and diversity training in intercultural communication in the higher education of future superiors on board.

Iversen, R.	2012	International maritime health	The mental health of seafarers	https://bit.ly/3J0U59e	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. The data on suicides proves that the mental health of seafarers in many cases continues to be very poor and often fatal. 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.
Jepsen, J.; Zhao, Z.; van Leeuwen, W.	2015	International maritime health	Seafarer fatigue: a review of risk factors, consequences for seafarers' health and safety and options for mitigation	https://bit.ly/3v8h1NL	Taking into account the frequency of seafarer fatigue and the severity of its consequences, one should look into the efficacy of the current legislative framework and the industry's compliance, the manning of the international merchant fleet, and optimised working, living and sleeping conditions at sea. Considering circumstances at sea, e.g., working in shifts and crossing time zones, that cannot be altered, further assessment of the potentials of preventive interventions including fatigue prediction tools and individual fatigue mitigation management systems is

					recommended.
McVeigh, J.; MacLachlan, M.; Kavanagh, B.	2016	Journal of The Institute of Remote Health Care	The Positive Psychology of Maritime Health	http://mural.maynoothuniversity.ie/10595/	Positive psychology may support health, positive attitudes and productive work behaviour; however, it cannot and should not be employed as a means of inoculating seafarers against the negative consequences of fundamentally unreasonable work practices. Rather, positive psychology can help seafarers thrive in an overall context that recognises and enacts the benefits of a positive and reasonable work environment.

Weiser, S.; Lis, A.; Ziemke, G.; Hiebert, R.; Faulkner, D.; Brennan, T.; Iveson, B.; Campello, M.	2018	Military medicine	Feasibility of Training Physical Therapists to Implement a Psychologically Informed Physical Therapy Program for Deployed U.S. Sailors and Marines with Musculoskeletal Injuries	https://bit.ly/3OrBUdP	There were two PT staff members on the carrier. Both received passing knowledge test scores and demonstrated role-playing proficiency. Clinical note assessment and discussions during conference calls also indicated successful implementation. The feasibility of training Navy PT staff to implement PiPT (Psychologically Informed Physical Therapy) was demonstrated. PT staff successfully translated training into practice.
Hjarnoe, L.; Leppin, A.	2013	BMC public health	Health promotion in the Danish maritime setting: challenges and possibilities for changing lifestyle behaviour and health among seafarers	https://bit.ly/3PL2Iqj	Significant changes were identified for levels of fitness, daily sugar intake and metabolic syndrome. However, these results were not associated with participating in the health educational interventions. One possible explanation for the improved fitness rate could be the upgrading of fitness equipment onboard the ships provided by the management level. The decrease in daily sugar intake and prevalence of seafarers with metabolic syndrome might be associated with the cooking course intervention which aimed at providing healthier daily meals on board. The findings suggest that a multicomponent health promotion intervention program has the potential to achieve change in seafarers' health

					behaviour and health parameters.
Stannard, S.; Vaughan, C.; Swift, O.; Robinson, G.; Altaf, S.; McGarry, A.	2015	International Maritime Health	Women seafarers' health and welfare survey	https://journals.viamedica.pl/international_maritime_health/article/view/43398	Routine wellness checks, nutrition and information on joint and back pain are the main areas that women seafarers stated health screening/services/information would be most useful to improve their health and wellbeing. They suggested this could best be received directly from health professionals, or alternatively by reading leaflets or from online websites/an app. Significantly 37% of women seafarers also stated that they do not have access to sanitary bins within the toilet and 18% say that sexual harassment is an issue.

Conclusions: The responses received highlight a small number of areas where relatively simple and low-cost interventions might improve the health and welfare of women seafarers. Specifically, these include the production and appropriate, distribution of gender - specific information on back pain, mental health, and nutrition in addition to gynaecological complaints, to all |

					women seafarers; the introduction of means for disposing of sanitary waste for all female crew on all ships and the improved availability of female specific products e. g. sanitary products in port shops and welfare centres worldwide.
Ayer, L.; Ramchand, R.; Geyer, L.; Burgette, L.; Kofner, A.	2016	The Journal of primary prevention	The Influence of Training, Reluctance, Efficacy, and Stigma on Suicide Intervention Behaviour Among NCOs in the Army and Marine Corps	https://bit.ly/3RMboyy	Efficacy and reluctance were independently associated with intervention behaviours, and stigma was only associated with intervention behaviours among Army NCOs. Study results suggest that while quantity of training may help NCOs feel more confident about their ability to intervene, other efforts such as changing training content and delivery mode (e.g., interactive vs. didactic training) may be necessary in order to reduce reluctance and stigma to intervene with service members at risk for suicide.

| McVeigh, J.; MacLachlan, M.; Cox, H.; Stilz, I.; Fraser, A.; Galligan, M.; Meachair, S. | 2021 | International Maritime Health | Effects of an on-board psychosocial programme on stress, resilience, and job satisfaction amongst a sample of merchant seafarers | https://www.webofscience.com/wos/woscc/full-record/WOS:000744096000004 | A significant interaction between programme participation and weeks on board indicated that the effects of weeks on board on perceived stress differed significantly for the intervention group and matched control group. Weeks on board had a significant effect for perceived stress for the control group (p = 0.02), but not for the intervention group (p = 0.857).

Conclusions: These findings indicate that participation in the programme moderated the effects of weeks on board on perceived stress, suggesting that the programme may have safeguarded participants against the effects of weeks on board on perceived stress. Importantly, however, a work environment that is experienced as supportive, inclusive and just is necessary as a cornerstone for individually focused psychosocial interventions to be optimally applied. |

Harden, L.; Jones, N.; Whelan, C.; Phillips, A.; Simms, A.	2021	BMJ Military Health	A systematic review of psychological training or interventions given to UK military personnel prior to deployment	https://www.proquest.com/docview/2480574239/B192953EC5CC4905PQ/95?accountid=14693	Although somewhat disparate, pre-deployment interventions shared the aim of promoting prior to, during and after deployment health and well-being. Social benefits such as improved cohesion and improved stress management skills were identified in some studies, although substantial mental health and well-being benefits were not found.
Trauth, K.	2021	Marine Log; New York	Building Safe, Healthy Work Environments for Seafarers	https://www.proquest.com/docview/2559722058/CD2E2771C11E498FPQ/10?accountid=14693	Five key themes were identified that influence mariners' wellbeing such as fatigue, the work environment, the nature of the role, socialization and leadership. To address these, the report offers the following intervention strategies, several of which have proven results in other safety critical industries: * Peer support mechanisms; * Simulation exercises; *Line management training and development; * Employee assistance programs and counselling helplines; * Telemedicine; *Training regarding the importance of good nutrition and physical exercise; and *Methods to improve crew/tearr. socialization.

Hjarno, L.	2013	University of Southern Denmark	Health promotion intervention in the maritime setting	https://www.sdu.dk/~/media/Files/Om_SDU/Institutter/Ist/MaritimSundhed/Phd%20afhandlinger/LuluPhD05122013.pdf	Five different interventions were implemented in 2008/2009. Two of those were structural or socioecological interventions aimed at providing a healthier environment for all seafarers in the two companies (cooking course and upgrading of fitness room onboard the ships). In addition, three health education interventions were offered. One was a group-based intervention (smoking cessation), and two were individual-focused interventions (guidance on physical training and extra health check-ups). The follow-up study (Paper 2) identified positive changes in some of the lifestyle risk behaviour and lifestyle related risk factors, which might suggest that the interventions had an effect. However, none of the changes could be linked to the health education interventions. Positive effects may have come from the structural interventions which, however, due to design limitations, remain speculative. A definite finding of the study was that implementing health promotion interventions in the maritime workplace setting is a challenging task. Structural restrictions on achieving appropriate reach of the seafarers was a clear barrier which point to the need for easily accessible and specifically tailored health promotion intervention taking into account the special conditions of the maritime workplace setting. The main findings of the cooking intervention study suggest (Paper 3) that it is possible to

					promote a nutritious and healthy diet at sea by way of health education provided to the professional group acting as gatekeepers of nutrition on ships: the cooks. However, structural barriers within the maritime setting prevent getting the full benefit from this learning process, which calls for additional attention from the management level of the maritime industry. If pervasive and sustainable change is to be achieved, these structures need also to be included as targets of health promotion.
Osterman, C.; Praetorius, G.; & Hult, K.	2017	49th Nordic Ergonomics Society (NES) Conference Joy at Work, Lund 20-23 August, 2017	Work environment challenges and participatory workplace interventions on passenger ships	https://www.diva-portal.org/smash/record.jsf?pid=diva2%3A1135657&dswid=-4875	The main findings of this study show that physical work environment factors important for the occupational health and well-being of the crew working in the service department are largely related to the high physical load and time pressure experienced by the employees. The design of workplaces and equipment is one of the cornerstones for a sustainable work environment. It can either be a factor that increases the risk for ill health, stress and frustration, or it can become a precondition for a work environment characterised by a good fit between worker, environment and organization. As shown in this paper, participatory design practices open the opportunity to foster employee engagement in workplace design and can be used to transfer control to the workforce, enabling employees to influence and improve their own

					work environment significantly
Ziello, A.; Angioli, R.; Fasanaro, A.; Amenta, F.	2013	International Maritime Health	Psychological consequences in victims of maritime piracy: the Italian experience	https://journals.viamedica.pl/international_maritime_health/article/view/35799	Traumatic experiences such as being kept in captivity by pirates could entail relevant psychopathological disorders in victims and their families. Quality care interventions, aimed to develop paradigms for resilience training, represent a priority.

| Surtees, R. | 2014 | Global Human Trafficking: Critical Issues and Contexts | At sea: The trafficking of seafarers and fishers from Ukraine | https://bit.ly/3PuirKC | The chapter explores the issue of trafficking at sea. It signals different sites of vulnerabilities and experience, and different intervention needs and opportunities. |
| Sekhon, S.; Srivastava, M. | 2021 | Psychological Studies | Quality of Work life and Life Satisfaction of Modern Day Sailors | https://link.springer.com/article/10.1007/s12646-021-00598-8 | The identification of important job demands, and resources can be used as a basis for changing, supplementing, and introducing new interventions to reduce the detrimental impact these factors have on the well-being of the individual seafarer. |

Asare, B.; Kwasnicka, D.; Powell, D.; Robinson, S.	2021	Global Health	Health and well-being of rotation workers in the mining, offshore oil and gas, and construction industry: A systematic review	https://pubmed.ncbi.nlm.nih.gov/34301674/	Rotation work is associated with several poorer health behaviours and outcomes, such as sleep problems, smoking, alcohol consumption and overweight/obesity. Interventions needed to improve rotation workers' health should include maximising available job resources and reducing job demands. Further longitudinal studies are needed to explore the long-term health effects of rotation work and the short-term contextual effects of the different aspects of rotation work.
Pandey, S.; Pestonjee, D.	2018	Sustainable Development of Human Capital: Exploring Perspectives from Grassroots to Global Research and Practice	A qualitative study of work stress and employees' expectations of stress management interventions in context of Indian oil & gas industry professionals	https://bit.ly/3omeegh	These findings suggest that employees working in Indian oil and gas industry are well aware about serious impact of work stress on their professional, personal, family, and social life; and perceive stress management training workshops very helpful in managing their work stress. Their expectations suggest that their employers need to focus on both primary and secondary interventions for effective workplace stress management. Their management should make their policies more employee-friendly, provide positive work environment, focus on proper allocation of work, provide necessary management support and open communication between management and employees.

Sreekumar, T.; Nagendra, H.; Ilavarasu, J.	2019	SCMS Journal of Indian Management	Mediating role of mindfulness: Positive affect and perceived stress among employees	https://bit.ly/3zqqBOG	Yoga intervention program is effective in addressing the stress of offshore employees working in oil and natural gas company by improving mindfulness, positive affect, and better emotion regulation strategy, but to sustain their effects of yoga after the supervised guidance, periodic interventional camps may be needed without which they may succumb to further relapse.
Olaniyan, O.; Hystad, S.	2016	Revista de Psicología del Trabajo y de las Organizaciones	Employees' psychological capital, job satisfaction, insecurity, and intentions to quit: The direct and indirect effects of authentic leadership	https://www.sciencedirect.com/science/article/pii/S1576596216300196	Results from this study suggest that efforts should be made to focus on the components of an authentic leader during recruitment, training, or intervention. Conclusively, employees working in the marine/offshore sector are faced with persistent fluctuations and uncertainties, and having an authentic leader will promote job satisfaction, while reducing both job insecurities and turnover intentions among employees.

Barbarewicz, F.; Jensen, H.; Harth, V.; Oldenburg, M.	2019	Plos one	Psychophysical stress and strain of maritime pilots in Germany. A cross-sectional study	https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0221269	Duration and intensity of the multiweek work intervals seem to have a significant impact on the pilots' strain: pilots working in 4-month ROS have a higher strain level than pilots in a 1-week ROS. It seems necessary to change the rotation system towards a shorter and therefore better predictable and more family-compatible work system. An already occurring paradigm change in pilotage is to be included in long-term planning. These interventions should be reviewed in the future through follow-up studies and continuously optimised as necessary.
Slišković, A.; Penezić, Z.	2015	Review of psychology	Occupational stressors, risks and health in the seafaring population	https://hrcak.srce.hr/file/238879	Considering the studies reviewed, which portray sea-faring as a stressful and high-risk occupation with a great number of possible negative influences on health and well- being, it is important for shipping owners, unions and international regulatory bodies to direct attention to primary intervention strategies, i.e., reduction and minimization of occupational stressors and risks.

Abila, S.	2022	University of Plymouth funded by LRF	Mental health interventions for international seafarers during the COVID-19 Pandemic: a pilot study	https://bit.ly/3Bak385	The report concludes with a number of recommendations for seafarers' mental health with specific reference to the pandemic including seafarers being classed as frontline or essential workers, ensuring that the vaccination programme and PPE is available to them. In addition to this there are a number of recommendations for dealing with crisis situations. Seafarers found all on the interventions explored here beneficial.
McVeigh J; Maclachlan M.; Coyle. C.; Kavanagh W.	2019	Maritime Studies, Springer	Perceptions of Well-Being, Resilience and Stress Amongst a Sample of Merchant Seafarers and Superintendents	https://link.springer.com/article/10.1007/s40152-018-0129-1	Findings were interwoven by two critical themes. The first, recent changes, was expressed by participants in relation to fewer opportunities to relieve stress in recent years due to reduced socialisation and shore leave. The second, organisational justice, was indicated by participants regarding the importance of a just work environment. Although depression and other forms of psychosocial distress may be experienced individually, their causes are multifaceted and cannot be addressed only at the level of individual functioning. We must address causes of perceived injustice at the organisational and industry levels, alongside supporting the capacity of individuals to cope with challenging situations. A working environment that is experienced as

					supportive and just is therefore crucial for individually focused psychosocial interventions to be optimally applied.
Abila, S.; Acejo, I.	2021	International Maritime Health	Mental health of Filipino seafarers and its implications for seafarers' education	https://journals.viamedica.pl/international_maritime_health/article/view/72774	Based on a broad selection criteria, 28 eligible papers demonstrate collectively three key findings: firstly, there is paucity in published research on seafarers' mental health; secondly, the majority of published studies are associated with a recent piracy crisis, where a significant number of mariners were attacked, taken as hostages, or killed; thirdly, three key areas emerged under which research on Filipino seafarers' mental health can be organized: the medical repatriation of seafarers, system of care for the mental health of seafarers including the diagnostic standards used, and seafarers' experiences and conceptions of mental health including the mental health effects of COVID-19.

Qin, W.; Li, L.; Zhu, D.; Ju, C.; Bi, P.; Li, S.	2021	BMJ Journals	Prevalence and risk factors of depression symptoms among Chinese seafarers during the COVID-19 pandemic: a cross-sectional study	https://bmjopen.bmj.com/content/11/6/e048660	This study aimed to investigate the prevalence and risk factors associated with depression symptoms among Chinese seafarers during the COVID-19 pandemic.
Aragon, L.; Garalde Jr, D.	2017	ASEAN Tourism Research Association Conference (ATRC) 2017	COMPLIANCE OF PHILIPPINE MANNING COMPANIES WITH MARITIME LABOR CONVENTION: PROPOSED INTERVENTION IN ASEAN SETTING	https://ir.unimas.my/id/eprint/18114/1/Hamrila-1.pdf#page=261	Findings revealed that in terms of welfare services provision of international shipping companies for Filipino seafarers, it is "Complied. However, it highlighted several challenges on varying interpretation on compatibility with existing Philippine labour Laws. It also revealed that there is lack of commitment on the part of ship owners to comply with specific regulations and that the Filipino seafarers lack awareness on the rights and privileges accorded to them. This posed several implications relating to performance of duties in the tourism sector.

Simon, E.; Fernandez, K.	2016	Psychological studies, Springer	The phenomenology of maritime piracy experiences of Filipino seafarers	https://link.springer.com/article/10.1007/s12646-015-0348-0	Analysis results revealed nine salient themes under two categories. The first category included themes related to the piracy experience: fear and helplessness, holding onto protocol, prayer as an automatic coping response, and the importance of family. The second category was comprised of themes related to the seafarer schema: seafarer understanding of piracy, the seafarer's fortitude ("buo ang loob"), the plight of seafarers, seafaring as a passion, and piracy as part of the job. Implications for trauma research and interventions for piracy-affected seafarers are discussed.
Kim, J.; Jang, S.	2018	International Journal of Environmental Research and Public Health	Seafarers' Quality of Life: Organizational Culture, Self-Efficacy, and Perceived Fatigue	https://www.mdpi.com/1660-4601/15/10/2150	the final model accounts for 63.1% of the variance in seafarers' quality of life. As such, this study shows that self-efficacy is important for the quality of life of seafarers, having both direct and indirect effects. Moreover, organizational support may prove to be the primary intervention point for relieving perceived fatigue and enhancing self-efficacy, thus improving the quality of work life

An, J.; Liu, Y.; Sun, Y.; Liu, C.	2020	International Journal of Environmental Research and Public Health	Impact of Work–Family Conflict, Job Stress and Job Satisfaction on Seafarer Performance	https://www.mdpi.com/1660-4601/17/7/2191	The research results revealed that work–family conflict and job stress negatively affects seafarer self-reported performance, while job satisfaction positively influences seafarer job performance. Findings also show that job satisfaction plays a moderating role in the relationships between work–family conflict, job stress and seafarer performance. Our findings demonstrate that work–family conflict, job stress and job satisfaction manifested are significant predictors for seafarer performance. Important applications and implications are provided for managers and researchers.
Österman, C.; Boström, M.	2021	Marine Policy	Workplace bullying and harassment at sea: A structured literature review	https://bit.ly/3PtAVuY	Workplace bullying and harassment is a substantial problem in the maritime industry. •Prevalence ranges from 8% to 25% of all seafarers and over 50% of women seafarers. •The systematic review demonstrates a lack of scientific intervention studies. •Underlying causes of bullying and harassment must be addressed to protect workers. •Recommendations to improve conditions for women are likely to benefit all seafarers.

Jepsen, J.; Zhao, Z.; van Leeuwen, W.	2015	International Maritime Health	Seafarer fatigue: a review of risk factors, consequences for seafarers' health and safety and options for mitigation	https://journals.viamedica.pl/international_maritime_health/article/view/42447	Work at sea involves multiple risk factors for fatigue, which in addition to acute effects (e.g., impaired cognition, accidents) contributes through autonomic, immunologic, and metabolic pathways to the development of chronic diseases that are particularly prevalent in seafarers. The article reviews certain interventions to reduce fatigue, stress and improve sleep.
Pathak, K.	2020	Gard	Seafarers in a time of pandemic – strategies for maintaining and improving mental wellbeing	https://bit.ly/3v6Jh3o	Blog piece about maintaining the mental wellness of the seafarers during the current challenging times. Kunal is a Master Mariner and has particular insight into life at sea as he sailed for twelve years on oil tankers and bulk carriers. There are also interesting interviews with spouses of crew members.

Jagosh, J.; Pike, K.; Henderson, S.; Calderón, M.,	2017	Maritime Charities Group	A Realist Review of Merchant Seafarers' Welfare (2006–2016): Examining the changing context for directing charitable innovations.	https://bit.ly/3omNOuT	On average the retained literature demonstrates that the condition of seafaring is as complex and challenging in 2016 as it was in 2006, if not more complex. Finally, an important area that is missing from the literature retained in this review has to do with the impact of climate change on seafarer welfare.
Oldenburg, M.; Jensen, H.	2012	Occupational and environmental medicine	Merchant seafaring: a changing and hazardous occupation	https://bit.ly/3aXwiu1	It concludes suggesting some preventive measures to protect the health of seafarer based on their short systematic review.

Oldenburg, M.; Jensen, H.;	2019	PLOS ONE	Stress and strain among merchant seafarers differ across the three voyage episodes of port stay, river passage and sea passage.	https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0217904	In the present study, it becomes clear that an accumulation of psychophysical stress takes place during port stay and leads to a subjectively and objectively higher strain level. In contrast, seafarers are more likely to recover during the sea passage. This knowledge should be used to offer ships' crews targeted health measures, in particular during the sea passage. This study indicates that there is more time to deliver on-board psychosocial interventions when ships are at sea.
Baygi, F.; Jensen, O.; Qorbani, M.; Farshad, A.; Salehi, S.; Mohammadi-Nasrabadi, F.; Asayesh, H.; Shidfar, F.	2016	International Maritime Health	Prevalence and associated factors of cardio-metabolic risk factors in Iranian seafarers	https://journals.viamedica.pl/international_maritime_health/article/view/44768	Our finding showed that the current prevalence of MetS among Iranian male seafarers working on tankers can negatively affect their health and career at sea.

Guerrero, A.; Fung, D.; Suaalii-Sauni, T.; Wiguna, T.	2013	Asia-Pacific Psychiatry	Care for the seafarers: A review of mental health in Austronesia	https://onlinelibrary.wiley.com/doi/abs/10.1111/appy.12031	Many Austronesian-speaking people have experienced recent or current foreign occupation, lack of recognized sovereignty, poverty and low socioeconomic status, and low availability of psychiatric resources and providers. An analysis of the biological, psychological/psychocultural, and social and environmental impacts (risk or protective) on either the prevalence/presentation of mental illness, help-seeking behaviour or access to mental health care, or management of mental illness suggested that there may be relatively unique stressors (e.g. loss of homeland from either global warming or nuclear contamination) affecting people in this region and certain biological profiles (e.g. susceptibility to obesity and metabolic syndrome) that may impact psychiatric treatment.
Frohholdt, L.	2017	WMU Journal of Maritime Affairs	Coping with Captivity in a maritime hijacking situation	https://link.springer.com/content/pdf/10.1007/s13437-016-0101-0.pdf	The captain assessed and reflected on the course of events in the situation, to which the negotiator responded appropriately, with acknowledging brief responses or psychological aid. This is similar to other highly dynamic decision-making settings, where decision-makers tend to continuously reflect and revise their view of the situation (Eraut, 2000). The data is also consistent with the "reflection-in-action" concept by Schön (1983) used by van den Heuvel et al. (Cogn Technol Work 16: 25–45, 2014) in their investigation of communication of police officers in hostage situations. However, the coping dynamics changed when the negotiator's responses became too minimal. This shows how the context and the individual's cognitive appraisal of the encounter co-

					shapes the coping dynamics in the situation. It is urged that pre-piracy care and seafarer training involves practical examples and information about roles and coping dynamics in negotiation communication as part of an orchestrated approach to the scourge of piracy.
Dimitrova, T.	2018	Indian Journal of Research	Worksite Health Promotion Intervention Among Seafarers	https://bit.ly/3aVc97S	People with obesity before intervention are 25.8% against 23.7% after, these with higher value of total cholesterol in blood before are 59,8% against 44,3% (p<0.05) and the number of sailors with higher level of triglycerides is reduced from 37,5% to 37,1%. Improvement of health condition among workers in maritime transport is possible by necessary activity in health promotion.

Salazar, P.; Arceo, T.; LAude, M.; Macalintal, L.; Tatlonghari, E.; Viana, S.	2019	Asia Pacific Journal of Education, Arts and Sciences	Seafarers' Distress and Coping Mechanisms: Basis for Support Program	https://research.lpubatangas.edu.ph/wp-content/uploads/2019/07/APJEAS-2019.6.1.08.pdf	It was found out that majority of the respondents are single 18- 35 years old males, working as staff for 1-3 years and earning 40,000-60,000 agreed that factor such as physical oppressiveness, long absence from work, high level of stress and long and unsociable working hours that caused distress when they are on board. They always cope with distress in terms of personal reason, physical factors, and personality traits. There is significant difference on factors that caused distress as to psychological when grouped according to position. Examination to assess the seafarer's coping mechanism before deployment may prevent future problems.
Nielsen, M.	2013	Scandinavian journal of psychology	Bullying in work groups: The impact of leadership	https://onlinelibrary.wiley.com/doi/abs/10.1111/sjop.12011	Transformational leadership and authentic leadership were related to decreased risk of exposure to bullying behaviour. Authentic leadership contributed to the variance in bullying beyond laissez-faire and transformational leadership. Analyses of indirect effects showed that the association between transformational leadership and bullying was fully mediated through safety perceptions, whereas a partial indirect association through safety perceptions was found for authentic leadership. The findings highlight the importance of recruiting, developing, and training leaders who promote both positive psychological capacities and positive perceptions among their subordinates.

Authors	Year	Source	Title	Link	Summary
King, T.; Abernathy, K.; Brumby, S.; Hatherell, T.; Kilpatrick, S.; Munksgaard, K.; Turner, R.	2019	Fisheries Research & Development Corporation	Sustainable fishing families: Developing industry human capital through health, wellbeing, safety and resilience	https://www.frdc.com.au/sites/default/files/products/2016-400-DLD.pdf	The health, safety and wellbeing of fishers and their families is vital to the ongoing strength and productivity of the commercial wild-catch industry. The national health, wellbeing and safety survey found clear health issues that require addressing, primarily those relating to stress and poor mental health, but also around high rates of cholesterol and blood pressure, diabetes, general bodily pain, as well as back and joint pain. Interventions must be diverse. Initiatives such as the Sustainable Fishing Families program comprehensively addressing holistic health and safety concerns and cultures of responsibility.
Hurtado, S.; Simon-Arndt. C.; Kohen, C.; Hunter, M.; Thomsen, CR.; Sanchez, S.	2019	Naval Health Research Center	Enhancing Decision-making under stress among sailors	https://bit.ly/3oq1y8d	The study showed that a command can feasibly integrate a resilience intervention into its training schedule and command culture for the purpose of improving the resilience and well-being of its crews.

| Panagiotis, M.; Nita, S.; Heather, C. | 2021 | Sleep Research Society | Rack curtains improve sailors' sleeping conditions in berthing compartments of the United States Navy (USN) ships | https://bit.ly/3zpkR7K | The results suggest that the enhanced curtains reduced average daytime sleepiness and severity of insomnia symptoms. A great difference in rack temperature with the enhanced curtains was observed; however, this may be attributed to the ship sailing in southern latitudes during the intervention period. Ongoing analysis will provide more insight on the utility of the enhanced curtains and their efficacy in improving sleep conditions. |
| | | | | | **END** |

Appendix: REA Matrix references

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