

Strategies and Measures to Improve the Work Environment of Service Crew on Board Swedish Passenger Vessels

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ABSTRACT: This paper presents findings from three workshops focused on the physical, organizational and social work environment of service crew working on board Swedish passenger vessels. The first workshop aimed to identify underlying causes of long-term sick leave among employees in the service department, and potential measures that can be taken to reduce ill-health. The second and third workshop explored knowledge of available methods to identify occupational safety and health risks, and suggest health-promotion strategies at individual, team and company levels. A total of 58 persons from the Swedish maritime cluster participated in the workshops. During the workshops, open and structured brainstorming was used to create affinity diagrams to systematically summarize the identified causes, risks and strategies. Although the results presented in this article stem from a research project focused on Swedish passenger vessels, many of the findings may be transferable to an international maritime setting towards a deeper understanding of seafarers' work environment and working conditions.

1 INTRODUCTION

From a transportation perspective, Sweden is an island, relying heavily on sea transport services. In 2015, 26 million passengers were transported to and from Swedish ports, which represents 74% of all port calls. Despite the global economic recession, passenger traffic to and from Sweden, especially the numbers of cruise liners, has steadily increased over the past decade [1]. Through the past 60 years, the constant growth of passenger shipping has led to the development of a wide variety of specialized vessels, reaching from commuter ferries to cruise liners that provide a full vacation experience including hotel services, entertainment, shops etc. In comparison to other segments of the maritime domain, cruise liners are slightly different as the business is focused on a direct interaction with customers, and competitors are

not only to be found in shipping, but also in the hotel and tourism business ashore [2].

The so-called Baltic Ferries represent a specialized type of passenger vessel common within Europe and especially around the Baltic Sea. Baltic ferries generally provide full hotel service and entertainment, but, unlike cruise ships, they also offer roll-on roll-off cargo services – so called RoPax vessels [2]. Compared to many international cruise ships, the working conditions on these Swedish controlled RoPax vessels differ. Commonly, the crew are onboard for 1-2 weeks, rather than several months, many are employed on a permanent 1:1 contract that allows for one week payed leave for one week worked on board. Swedish flagged vessels are also covered by the Swedish Work Environment Act (AML), which in many respects is more stringent than IMO rules. For example, the AML demands that the

crew are given the possibility to influence their working conditions and participate actively in the systematic work environment management.

Although the service department on board a passenger ship is the largest department in terms of number of employees – in Sweden they represent the largest share of seafarers in the national register of seafarers – this group has not received much attention in research yet. The large body of research on maritime work environment has focused mainly on the deck and engineering departments [e.g. 3, 4, 5]. Publications with a specific focus on the service department's work environment are rare and mostly focus on cruise liners from a more business-oriented perspective, addressing the impact of employee satisfaction and motivation on customer satisfaction [e.g. 6, 7]. Other research in the cruise liner domain has among others addressed occupational communities [8], work perceptions [9] and working and living conditions onboard [10]. A wider perspective is needed when investigating causes of ill health and possible measures towards improved work and living conditions for all seafarers.

Recently, two studies that address the service department onboard of Swedish passenger vessels have been published. Forsell et al. [11] found indications of work environment problems associated with noise exposure and heavy workload on neck, back and arms. Ljung and Oudhuis [12] primarily focused on the safety perceptions of employees in the service department. However, they also discuss the increased need for flexibility among the service department's employees because of a constantly decreasing number of crew, as well as temporary work contracts and economic pressure on the business.

To add to the knowledge base, this paper presents findings from a series of workshops focusing on the work environment and work-related health in the service department on board Swedish passenger vessels. The workshops were held as part of a larger research project analysing work-related experiences based on interviews, observations, survey data and social insurance statistics concerning sick leave longer than 60 days [13]. The project was conducted in cooperation between researchers at Kalmar Maritime Academy, Linnaeus University and the Swedish Social Insurance Agency for Seafarers (Försäkringskassan Sjöfart). The project was split in two parts, one part focusing on the analysis of several data sources and one focused on disseminating project results to employees in shipping companies, regulators and other professionals in the maritime domain.

Specifically, the aim of the workshops reported in this paper was to i) identify underlying causes in the physical, organizational and social work environment that can cause work-related long-term sick leave among employees in the service department; ii) suggest methods on how to identify and assess occupational safety and health risks within the systematic work environment management, before they lead to ill-health; and iii) suggest appropriate health-promotion strategies at individual, team and company level.

2 METHODS AND PROCEDURE

Three workshops were conducted, based on a participatory ergonomics approach. Participatory ergonomics is concerned with including workers' feedback in the design, evaluation and development of work systems and processes [e.g. 14, 15]. Thus, the workshop attendees took an active role in the identification of underlying causes and occupational risks, as well as in the development of tools and strategies to promote healthy, safe and efficient work environments onboard.

The first workshop was held in October 2016 and focused on identifying underlying causes for the increasing number of long-term sick leave in the service department. It served as a validation workshop for data from insurance statistics, a questionnaire, interviews and several onboard visits [13].

The second and third workshop were held in April 2018 and aimed to disseminate the study's results, as well as to motivate the participants to develop risk mitigating and health-promotion strategies for the physical and social work environment, as well as for the organization of work processes onboard.

2.1 *Participants*

2.1.1 *Workshop 1*

Twenty-eight representatives from the Swedish maritime cluster participated in the first workshop that were held in Stockholm. The participants represented a wide variety of organizations: six shipping companies were represented (n = 17), the Mercantile Marine Foundation (n = 4), SEKO Seafarers' Union (n = 2), the Swedish Confederation of Transport Enterprises (n=2), the Maritime Officers' Association (n=1) and the Swedish Transport Agency (n=2). The participants further represented a variety of functions within their organizations reaching from Managing Director and HR representatives, to safety delegates, healthcare and service personnel working onboard.

2.1.2 *Workshop 2*

Nineteen participants attended the second workshop in Stockholm. Of these, three had previously attended the first workshop. The participants represented four different shipping companies (n = 13), the Swedish Transport Agency (n = 1), SEKO Seafarers' Union (n = 2) and the Swedish Maritime Joint Work Environment Council (n=2). In addition, two Master students currently conducting thesis work about occupational accidents and injuries on board Swedish merchant vessels participated in the workshop. The participants from shipping companies represented a wide variety of shore-based and onboard functions.

2.1.3 *Workshop 3*

Thirteen people participated at the third and last workshop that was held in Gothenburg. The participants represented four different shipping

companies (n = 9), the SEKO Seafarers' Union (n=1), the Swedish Shipping Gazette (n=1), Swedish Transport Agency (n=1) and the Maritime Officers' Association (n=1).

2.2 Affinity Diagram

All three workshops applied the Affinity Diagram, or KJ method. This method was developed by Kawakita Jiro as a method to systematically organize large amounts of data derived through brainstorming to reveal connections and underlying relationships between ideas [16]. The KJ-Method has been widely used in quality management [17], but has also been recognized as an effective tool within usability testing and identifying user needs and requirements [18].

An affinity diagram is built bottom-up, which means that relationships and connections are developed based on a wide range of ideas and concepts. The first step is a brainstorming activity, where all ideas are noted down. Each idea is put onto a single sticky note. In a second step the ideas are discussed and ordered into categories. In a third step the connections between ideas and categories are developed through discussion. This can also mean that new relationships emerge and new concepts are built based on the discussion [16].

While the first workshop aimed to identify certain aspects associated with causes and countermeasures for long-term sick leaves, the second and third workshop also focused on participants learning the KJ method so that they would be able to continue to develop strategies for the design of the physical, organizational and social work environment in their own work settings.

2.3 Workshop procedures

Prior to each workshop, all participants received a short summary of the workshop's topic and the day's schedule. Further, each workshop started with a short introduction to the research project's background, its aim and results obtained through interviews, observations, statistics and the survey. Further, the focus of the workshop was presented and what would be expected of the participants, including information about anonymity, confidentiality and informed consent.

2.3.1 Procedure at workshop 1

The workshop was divided into four main sessions; one session for identifying and categorizing potential causes for long-term sick leave, followed by three sessions for specifying the identified causes and measures and how they relate to the physical, organizational, or social work environment. Each session started out by a short presentation of the current topic and was followed by a joint discussion. The sessions lasted about 40 minutes to one hour each.

Before the first session, the participants were asked to brainstorm with the help of sticky notes. They were asked to individually write down their opinion of which underlying causes could be related to the

increased long-term sick leave within the service department on passenger vessels. In conjunction with the causes, the participants were prompted to identify one to two potential measures for the causes they had identified. After 10 minutes, the participants put their sticky notes on a wall for all to see.

The first session focused on discussing and grouping the potential causes for long-term sick leave. The second to fourth sessions were focused on countermeasures within the physical, social and organizational work environment. The discussions were led by a moderator who modified the grouping of sticky notes and added new concepts, if mentioned in plenary. The participants were asked to confirm each modification to ensure that the developing affinity diagram still matched the intent uttered as part of the discussion.

As an outcome of the workshop, an affinity diagram grouping potential measures to long-term sick leave was created in plenary with the participants. To increase the overall credibility and transferability of the workshop's outcome, the results were compiled and sent to the participants for as a means of expert auditing [19, 20].

2.4 Procedure at workshop 2 and 3

Workshop 2 and 3 followed the same procedure. Upon arrival, the participants were assigned to groups of 3-6 people with the aim to avoid representatives from the same organization or company working together during the workshop.

The workshops were divided into three separate sessions of approximately 30-40 minutes each. The sessions each focused on one of the following questions:

- 1 Which methods/indicators can be used to identify risks for long-term sick leaves?
- 2 What risk reducing measures can be used on an individual, team, and the company-level?
- 3 How can health-promoting factors in the work environment be strengthened to promote workers' well-being?

The sessions started with a brief introduction and a presentation of the current question to discuss. The question was displayed on screen in the groups' sight so that all participants could re-read it while working with it. After the introduction, the groups were asked to brainstorm for 10-15 minutes. To obtain a wide spread of ideas, each group was assigned a certain area, either physical, organizational or social work environment to provide a focus for the brainstorming. To structure the brainstorming further, the participants were also asked to assign the categories individual, work team, shipping company, or others to each aspect that was identified during the brainstorming.

After 15 minutes each group presented their sticky notes in plenary and posted them on a board in the centre of the room. After all groups had presented their results, the notes were ordered through a group discussion, to create a joint affinity diagram to uncover relationships among what had been identified (see example in Figure 1). After the workshop, the affinity diagrams created were

digitalized as mind map and sent to the participants to provide an opportunity to comment and validate the results.

3 RESULTS

The following section presents a summary of the results from the workshop with an emphasis of the results obtained during workshop 2 and 3. A detailed description of the outcome of workshop 1 can be found in [21].

3.1 Results from workshop 1

Workshop 1 focused on discussing the underlying causes of and potential countermeasures for long-term sick leaves among employees in the service department. Causes and measures were split into three categories; physical, organizational and social work environment.

3.1.1 Physical work environment

Causes for long-term absences were said to be mainly related to the physical work and the design of workspaces and equipment. Many work tasks performed by the service personnel imply a high *physical load*, leading to an increased risk of musculoskeletal disorders. It was specifically emphasized that some sources of physical load, such as weight of glasses and plates, might go unnoticed by those making decisions about tableware onboard. Often, the difference between a certain glass or plate design is just a few grams. However, the aggregated weight to be handled by the staff can easily lead to this difference increasing to a considerable weight considering the large numbers of guests that are served during a shift. Further, the design of workspaces is not always properly adapted to the work as it is performed. Workspaces may be very narrow, making certain areas hard to reach and hindering the use of supportive equipment, such as serving carts in the restaurant. In addition, noise and vibrations caused by a moving work environment at sea were identified as aggravating the effects of heavy load and joint exposure.

Countermeasures to reduce the risk for sick leaves corresponded to the design of workspaces, working techniques and health promoting measures. The participants felt that end-user involvement in the (re)design of workspaces and work stations could significantly contribute to an improved work environment. It is believed that the knowledge and experience of those working onboard can be a rich source of information for designers and naval architects. Furthermore, providing personal protective equipment, such as shoes to dampen the vibrations, and reduce the risk for slips, trips and falls, as well as training courses in working techniques could also contribute to improved health among the employees. Lastly, more time set aside for a thorough introduction to the workplace and increased rotation were mentioned.

3.1.2 Organizational work environment

Within the organizational work environment, underlying causes for long-term absences were associated to aspects of leadership and organization of work. The participants pointed out that there might be a lack of knowledge on how to support and manage staff in their work, as well as a lack of clear organizational structures with salient responsibilities assigned to team leaders. Furthermore, too little, or suboptimal manning, time pressure, long working hours and monotonous tasks were highlighted as causes of ill-health.

To counterbalance the identified causes, the participants pointed out that clear communication within the company, a better cooperation between onboard and shore-based personnel, as well as a focused recruitment strategy offering career advancements to the staff are prerequisites for a healthy work environment. Especially organizational changes should be communicated early and offer the opportunity to provide input and feedback for the staff.

Further, when team leaders or managers are recruited internally, it is important that they are provided with adequate leadership training and support to ensure that they have knowledge and understanding of the responsibilities that follow with the assignment and to develop their management skills.



Figure 1. Example of an affinity diagram under development during workshop 2 illustrating causes of ill-health and potential measures that can be taken at individual, team and company levels.

Crew size and organization of work were also highlighted as an area that could significantly contribute to reduce long-term sick leave. Suggested measures were mainly directed towards offering more flexible working hours, increased manning and better employment security.

3.1.3 Social work environment

When discussing factors within the social work environment, lack of identity and recognition as seafarer was identified as a crucial contributing factor. Although the service department on board a passenger vessel is the largest in terms of number of employees, the employees are not always recognized as seafarers by other crew members. Consequently, there might be friction between the service department, and the engine or deck crew. This might result in a negative 'us and them-feeling', as stated by one of the workshop participants. Measures to encourage a collective identity focused on joint seminars or training, as well as activities across the departments on board to increase the mutual understanding for each other's work and work identity, as well as creating a feeling of belonging to the same team/crew.

3.2 Results from workshop 2 and 3

The following section summarize the findings from workshop 2 and 3.

3.2.1 Identification of risks

The results from workshop 2 and 3 show that even if the participants displayed some practical experience of assessing work environment risks, available methods and tools for this are not well known. Hence, the workshop discussions during this session was at first hesitant and resulted in few notes on the wall. The participants could agree on various indicators and sources of information, but few tools to assist when doing a risk assessment. One of the few established methods for risk assessments that were mentioned during the discussion was the Rapid Upper Limb Assessment (RULA) method for assessing musculoskeletal risks [22]. The RULA had been used by two safety delegates working in a restaurant on board to assess the physical load on the upper body when serving food.

Figure 2 provides an overview of the identified indicators and sources of information that may be useful when performing a risk assessment to capture an increased risk for sick leave. The indicators are categorized at individual, team and company level.

At an individual level, most of the indicators and information sources are related to the individual worker in the work settings, thus emphasizing the importance of managers and colleagues to be attentive to changes in a colleague's behaviour.

Indicators and sources of information to identify risks for long-term sick leave		
INDIVIDUAL LEVEL	TEAM LEVEL	COMPANY LEVEL
Changed behaviour Displaying stress reactions Difficulties to adopt to changes Drug/alcohol addiction Whistleblowers	Low manning, shift design Deviations from procedures Work appraisals Resistance to developments Lack of familiarization for new employees (time/information) Work place conflicts, bullying	Sick leave statistics Accident and near-miss statistics Customer complaints Employee surveys

Figure 2. Overview of indicators and sources of information to identify risks for long-term sick leave.

At the team level, emphasize is placed on manning and the need for both adequate number of people, composition of competences, and a close monitoring of work procedures. Especially so-called combination shifts, where an employee rotate between work stations with little or no time for recovery.

Lack of, or poorly designed workplace inductions, procedures and checklists, and a poor overall social climate with workplace conflicts or bullying, indicate potential risks and needs in the social, organizational and physical work environment. At company level, the workshop participants foremost emphasized that a close monitoring of statistics concerning both sick leave (short and long-term), as well as occupational accidents and incidents can help to identify risks in the work environment. Furthermore, surveys, such as employee climate measurements, and analysis of employee turnover can be effective tools for the HR department to gain an overview of working conditions onboard, as well as insights into potential reasons for changes in the number of sick leaves among the employees.

3.2.2 Risk mitigating measures

In the second part of the workshop, the participants were asked to suggest measures to mitigate or decrease the risks for long-term sick leave (summarized in Figure 3). At individual level, the participants emphasized the need for supportive work equipment and personal protective equipment. Further, the individual responsibility to follow procedures and routines at work and report when routines are not functioning as planned. The workshop participants also stated that it is the duty of the employees to foster and participate in an open and active exchange of knowledge and expertise between colleagues.

At team level, many of the suggested mitigation measures were similar to those identified during workshop 1. The organization of work, including clear procedures, responsibilities, work demands and instructions are seen as necessary preconditions for a safe work environment. Furthermore, employees need to be supported by their manager, which also includes regular feedback, an open dialogue between manager and employees, as well as the opportunity to hold team meetings. Specifically highlighted at team level was the possibility to raise concerns about work environment issues with the local safety delegates and when necessary to the safety committee on board.

Risk mitigating measures at individual, team and company level		
INDIVIDUAL LEVEL	TEAM LEVEL	COMPANY LEVEL
Protective and supportive equipment	Organization of work	Policies
Follow procedures and work routines	Employee support and benefits	Values and norms
Personal responsibility for own health	Communication (appraisals, group meetings)	Employee surveys
Exchange knowledge with colleagues	Safety delegates	Follow-up statistics
Ask for work description	Risk assessment and risk assessment protocols	Manning
	Comradeship	Education and training
	Cooperation	Provide resources (material & personell)
		Workplace design

Figure 3. Identified risk mitigation measures at individual, team and company levels.

Safety delegates were seen as important partners in the systematic work environment management towards sustainable work environments, and the company should enable an effective cooperation between managers, safety delegates and employees. This also include that the safety delegates participate in regular risk assessments of work tasks, and that risk assessment protocols are developed to facilitate assessments and follow-up that proper actions are taken.

To counteract workplace bullying, victimization and a development of a negative social climate, the workshop participants emphasized the need for establishing and maintaining good working relationships, where team members in work teams, as well as in the crew as a whole, support each other. It is important that the company has policies and routines in place to identify potential risks in this respect at an early stage, and make sure that any wrong-doings can be reported and investigated.

3.2.3 Health-promotion strategies

In the final part of the workshop, the participants were asked to identify ways of promoting healthy and sustainable work environments. An overview of the identified aspects is depicted in Figure 4. At individual level, the participants once more emphasized the responsibility of the employees to take charge of their working conditions. It is important to clearly communicate needs and demands with regards to work tasks and preconditions, especially highlighting positive examples in the daily work, but also being able to clearly draw boundaries for their own work. According to the participants, being an employee means both to be loyal, but also to protect oneself with an emphasis on the fact that not all work conditions need to be accepted. Especially time to recover and rest between shifts was seen as important to promote well-being on a physical and psychological level. In addition, as work is conducted in teams, sensitivity towards co-workers was identified as being of utmost importance so that situations where a colleague may need extra support is recognized.

The second level of health-promotion strategies was identified as related to the work team, the department and the vessel as a whole. The participants highlighted that there should be some kind of activity and task mapping to identify those tasks that are experienced as particularly demanding,

either in a physical or psychological way. These demanding tasks should be distributed equally among the employees, as well as positive feedback to support and encourage employees during particularly stressful situations. Again, clear leadership structure and communication within and across departments onboard were named as preconditions for a healthy work environment, as well as room for teambuilding activities within and across departments. Participation in work meetings and safety committees should also be encouraged, as these pose cornerstones to workplace and work task design based on risk assessments and safety rounds.

Health promotion strategies at individual, team and company level		
INDIVIDUAL LEVEL	TEAM LEVEL	COMPANY LEVEL
'Employeehip'	Leadership	Clear policies, norms, values and goals
Openness about risks and needs	Encourage participation	Balanced manning
Emphasize positive examples	Communication and feedback	Communication ship - shore
Sensitivity towards co-workers	Mapping of work tasks	Work environment knowledge
Take time to recover	Teambuilding	Communication and feedback
Feedback and support to co-workers		Routines for risk assessments
		Routines for purchase of new equipment

Figure 4. Identified health -promotion strategies at individual, team and company levels.

With regards to the company level, the participants stated that clear policies, goals, values and norms for the work onboard and within the company constitute the frame for a healthy and sustainable work environment. Employees should feel valued and structures to provide feedback, career opportunities and encourage personal development. Furthermore, work materials and tasks should be reviewed on a regular basis to ensure that employees are not exposed to unnecessary risks and that supportive equipment is available to ease the physical and mental load at work. This includes the need to keep a knowledge bank with updated information on research concerning ergonomics and work environment design to promote a closer cooperation between ship and shore in workplace- and organizational design.

4 DISCUSSION

The three workshops were conducted with the aim to provide a deeper insight in how to promote and create sustainable and healthy work environments onboard Swedish passenger vessels, as seen by the people closest to the workplace. A wide variety of representatives from the Swedish shipping cluster participated in the three events. Through a participative approach, the participants were actively engaged in uncovering important relationships among aspects that relate to the physical, social and organizational work environment, and the way in which these might cause or counteract the increasing number of long-term sick leave among employees in the service department onboard Swedish registered passenger vessels.

The results presented and discussed in this paper is part of a larger research project and it is duly acknowledged that a synthesis of the results of the entire project show that employee health and job motivation is influenced by myriad of complex and interrelated factors [13]. Hence, it is necessary to adopt a systems perspective when designing and organizing work to avoid sub-optimizations and create safe, efficient and health work environments.

Within the physical work environment many of the underlying causes, risks and risk mitigation measures were related to the workspace design and the overall lack of ergonomic design onboard. Long working hours and exposure of the body to a heavy physical workload characterize the work on board the Baltic ferries. Narrow spaces, exposure to ship movements and vibrations, as well as the lack of supportive equipment, such as serving carts or protective shoes, were some of the factors that additionally contribute to long-term sick leave of the personnel in the service department. Furthermore, the overall limited knowledge on workplace ergonomics and how to integrate that into the daily work routines were also highlighted as contributing to the negative effects on the physical health of the employees.

Further, many of the causes of long-term sick leave captured by the workshop participants are related to high levels of job demands, performed with limited decision latitude, a combination well known to cause stress related ill-health [23]. The adaption to a continuous influx of new colleagues and the forming of interpersonal relationships can be a significant stressor [24].

The work and living environment on board a ship has a high incidence of physical and psychosocial stressors that can affect the individual seafarer, and especially so for the service department that performs on an arena where their work is constantly evaluated, and sometimes commented upon, by the guests. These results confirm some of the perceptions highlighted by Dennett et al in their study of the work undertaken by the service personnel on cruise ships [9]. They identified five main metaphors that the personnel used in their relation to their occupation; being a slave, an actor, a carer, a tactician and a robot. Especially the metaphor of actor is easily associated with the work environment in the service department. Since they are in direct contact with the guests, it can be experienced that they are performing on stage during working hours, during which their projection of motivation and job satisfaction may directly affect the guests' experience.

The results clearly show that there is a wide range of causes that can be associated to financial pressures within the maritime domain. However, many of the potential measures need not to come at a cost. Rather, improved structures for cooperation between ship and shore, and between departments and workers on board are likely to have a positive impact on both individual and overall performance and reduce the risks for accidents and ill-health, as illustrated for instance by [25]. Similarly, the benefits of involving the crew as end-users in purchase, design and development processes of new work systems, workspaces and equipment are well established also within the maritime domain, see for instance [26-28].

The crew can bring important and unique contextual knowledge about processes, tasks, equipment and potential risks into the development process that naval architects, interior designers or controller at the technical or purchasing departments generally lacks. This knowledge of how the work is actually done contribute to the quality of the end-result, but also towards an increased acceptance of the outcome. A participatory approach within the work environment management has been demonstrated to create ownership and establish commitment to agreed-upon solutions, more rapid implementation of workplace changes, and increased learning within the organization [29, 30].

A participatory approach is also needed when identifying and assessing risks in the physical, organizational and social work environment. Despite the plethora of methods and tools that are available, often free of cost, to facilitate work place risk assessments, these are not well known among the participants. Rather, there seem to be an ad-hoc retrospective approach to occupational risks. Knowledge and application of appropriate tools would allow managers, employees and safety delegates to do more with less resources and result in more comprehensive assessments of better quality [31].

As reflected in the health promotion strategies at individual, team and company levels, a systems approach to the design of workspaces and work procedures [32] on board might offer an opportunity to increase both well-being and job satisfaction of the personnel in the service departments, but also the overall system performance. To be able to do a job well requires a good fit between an employee's physical capabilities, workspace and organizational environment. If already considered during the design stage, end-user requirements for increased workability and safety of operation can be incorporated, often even at a lower cost. By understanding work from the perspective of the employees, shipping companies may gain insights on the overall work situation and may understand how various activities and teams in the service department interact and engage to achieve the common goal of providing high quality service to the guests on board.

While such a systems approach might seem expensive at a first glance, it can be argued that the implementation of a human factors approach has potential financial benefits to the company. As argued by for instance [33], the application of a human factors approach, including a systems perspective and end-user engagement in design, may have a multitude of positive effects for a company such as improved physical, psychological and social well-being, as well as a higher degree of motivation, growth and job satisfaction leading to an overall improved performance.

Naturally, several workshop participants raised questions about work-life balance and the impact of life at home on the health and well-being of an employee. It is inevitable that the private arena will have affect the professional arena as well, but these questions are outside the scope of this study. To some extent, this has been explored in [34] that investigates seafarers job commitment in light of gender and

family situation. Beyond a moral and ethical responsibility, an employer has no obligation towards an employee's personal and family issues. More research is needed to address and explore the topic of work-life balance for active seafarers in the merchant fleet to get a deeper understanding for how life and lifestyle at home are connected to an employees' ability to work and well-being.

Furthermore, one of the core outputs of the workshop addressed the need for more training and education. However, it was never specified in, greater detail, what type of training is needed and if the needs for certain education, e.g. courses in leadership, addresses a more global concept, or requires to be adapted to the specific circumstances of life and work onboard. This should be explored further.

Overall, the results of this study illustrate how knowledge of systematic work environment management in theory and practice can be used as a tool for employee and management collaboration, and for achieving benefits in terms of reduced sick leave and improved employee health, well-being and job satisfaction.

5 CONCLUSION

The research work in this paper presents how people working within Swedish passenger shipping view factors in the physical, organizational and social work environment of service crew on board passenger vessels. Causes for long-term sick leave were said to be mainly related to the physical work environment and poor design of workspaces and equipment, leading to an increased risk of musculoskeletal disorders. Suggested measures include a participatory approach in the (re)design of workspaces where knowledge and experience of those working onboard is utilized in the design and development process. Providing training in work technique, supportive tools that reduce physical load, and personal protective equipment, are other measures mentioned to prevent ill-health.

Adverse conditions within the organizational and social work environment, were largely associated to aspects of leadership and the organization of work. Suggestions for preventive organizational measures include allocating time for proper workplace induction for new employees and designing work schedules to allow for sufficient manning – in number and in competence – and ensure clear communication structures within the company and management training to managers and team leaders.

The results also demonstrate a lack of knowledge of the tools and methods that are available, often free of cost, to facilitate when doing risk assessments of the physical, organizational and social work environment.

Although these results stem from a research project focused on Swedish passenger vessels, many of the findings may be transferable to an international maritime setting towards a deeper understanding of seafarers' work environment and working conditions.

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