

Dockworkers' health and safety. A cross-sectional study of self-perceived safety and psychosocial work environment amongst Danish dockworkers

Nanna Overgaard Nielsen, Sasha Revelius Gaj Nielsen

Faculty of Health Sciences, Department of Public Health, University of Southern Denmark, Esbjerg, Denmark

ABSTRACT

Background: This study aimed to determine the characteristics and association between self-perceived safety and psychosocial work environment amongst dockworkers in Denmark.

Materials and methods: A cross-sectional study was conducted among dockworkers in three harbours in Denmark, using a triangulation strategy approach, with a questionnaire survey and telephone interviews. Both collection methods included questions on workplace safety, accidents, work environment, colleagues and management. The majority felt confident about the safety at the work place (88.8%) and agreed that good collaboration and teamwork among colleagues (95.4%) was the reason they felt safe. The majority were very satisfied with their job (76.1%). Moreover, the majority stated that they were thriving well in the changeable working hours (85.1%) and did not find it stressful to be a part-time worker with no guarantee of work (80.2%). 46.1% had never felt stressed, and only 7.9% had felt stressed often the last 2 weeks. The main source of feeling stressed was the combination of work and personal life (39.3%). The study population was 88 and the response rate of the questionnaire was 41%.

Results and Conclusions: Due to the small study population and the distribution of answers, it was not possible to measure an association between self-perceived safety and psychosocial work environment; however, it was found that dockworkers were greatly satisfied with the working conditions, primarily because of good colleagues, flexible working hours and a satisfying pay cheque.

(Int Marit Health 2019; 70, 3: 171-179)

Key words: dockworkers, self-perceived safety, psychosocial work environment, Denmark

INTRODUCTION

The psychosocial work environment has been a global focus for many years. It has been demonstrated that a poor psychosocial work environment increases the risk of various diseases including stress and cardiovascular disease [1]. Each year social costs related to stress cost the Danish society approximately 14 billion kroner and citizens with cardiovascular diseases cost annually 1.87 billion kroner, due to lost earnings, negative effects on production and sick leave [2-4]. Despite the increased focus on the psychosocial work environment, dockworkers are a target group where there is a tendency to focus primarily on the physical work environment (Wang et al.). Dockworkers play an important

role in international trade and commerce and have a history of hard physical labour. Dockworkers' job has traditionally consisted of heavy, manual lifting, and although automation has reduced the workload, there are still many factors which may influence the health of the dockworkers. These factors make the job hazardous in different ways [5-7].

The literature suggests that working different shifts, suffering from fatigue or not paying enough attention to the work are factors which may influence the level of safety in the workplace [6, 8]. Therefore, psychosocial work environment may have an impact on safety, as the tasks dockworkers perform are hazardous. This requires dockworkers to work well together, as their safety depends upon the



collaboration with, and the relation to, each other [5, 6, 9]. Based on this, workplace health and safety should be considered in relation to both the physical work environment and the psychosocial work environment, as the psychosocial work environment also influences the degree to which employees are able to work safely. This study therefore aims to determine the characteristics of, and association between, the self-perceived safety amongst dockworkers and the psychosocial work environment.

MATERIALS AND METHODS

STUDY DESIGN

A cross-sectional study design was used to examine dockworkers' self-perceived safety and the psychosocial work environment in Denmark [10–12]. A triangulation strategy approach, combining quantitative and qualitative approaches was used to enhance the validity of the study [10, 13–15]. The collection of data was done through a questionnaire survey and telephone interviews [16]. The study area was the major harbours in Denmark [17, 18].

STUDY POPULATION

Dockworkers from the four biggest harbours in Denmark (Copenhagen, Aarhus, Aalborg and Esbjerg) were invited to participate. A representative from each harbour was contacted by e-mail. Copenhagen, Aalborg and Esbjerg replied and were supplied with an electronic questionnaire. Esbjerg reported back, that they would prefer the questionnaires in paper format and the request was fulfilled. Aarhus never replied and was excluded from the study.

The study population included all dockworkers at the three Danish harbours who were > 18 years old and either part-time or full-time employees. Consent to participation was obtained before filling out the questionnaire; those who did not want to participate, or filled out the surveys incorrectly, were excluded from the study.

DATA COLLECTION

Data was collected via a 77-item questionnaire, which was sent out electronically to 214 dockworkers. The questionnaire was available over a 2-month period. In Esbjerg, the questionnaire was available both electronically and in paper form. The researchers were aware that there may be more errors or missing responses on the paper version of the questionnaire and accounted for this by both researchers thoroughly checking the answers before uploading them electronically [19].

This resulted in a total of 88 participants (Fig. 1). The response rate was 41%. Copenhagen represented 46.6% of the responders, Esbjerg 40.9%, and Aalborg 12.5% (Table 1).

In addition to the survey, semi-structured interviews were held. The participants were asked at the end of the

questionnaire if they would like to participate in an interview and, if so, to provide their email-address. Out of the 88 responses, 21 participants agreed to participate in an interview. Due to various reasons as shown in Figure 2, 14 were unable to participate, resulting in a sample population of 7 participants. The participants who agreed to an interview were predominantly from Copenhagen, with only one from Aalborg and one from Esbjerg. All 7 interviews were conducted via telephone, and all interviews were done by the same person to ensure homogeneity in the interview [20–24].

STATISTICAL ANALYSIS

All data from the questionnaire survey was analysed using STATA 15, encoded into categorical data, and are presented in the attached tables. Descriptive statistics were used to describe the basic characteristics of the data, and to show the percentage distribution of the different responses.

VARIABLES

All relevant characteristics of the participants are listed in Table 2. Items used in the questionnaire survey are listed in Tables 3–8. The items listed in Table 3 pertain to the dockworkers' self-perceived safety, and the items listed in Tables 4–8 pertain to their psychosocial work environment.

ETHICAL ISSUES

Measures were taken to ensure good scientific practice. The purpose and aim of the study were explained to all participants orally and in written form in the introduction to the questionnaires. Confidentiality was ensured in the questionnaire phase through the participants completing the questionnaires anonymously. Responses from the interview phase were de-identified to preserve the participants' anonymity. Furthermore, the participants were free to withdraw from the study at any time. All participants signed an informed consent form.

RESULTS

CHARACTERISTICS OF THE PARTICIPANTS

Mean age of the respondents was 50.4 years, with a standard deviation of 10.7 years, and a range from 25 to 69 years. All respondents were males, and were from Copenhagen (46.6%), Esbjerg (40.9%) and Aalborg (12.5%). Almost half (46%) of the participants were casually employed, 40.2% had permanent employment. The majority of the respondents were either responsible for security (63.2%), stacking cones and twist locks (63.2%), lashing of containers (62.1%) or Ro/Ro (72.4%), but all participants worked within several different work fields. The three main reasons for working as a dockworker was that they found the work exciting (64.8%), a decent salary (63.6%), and flex-

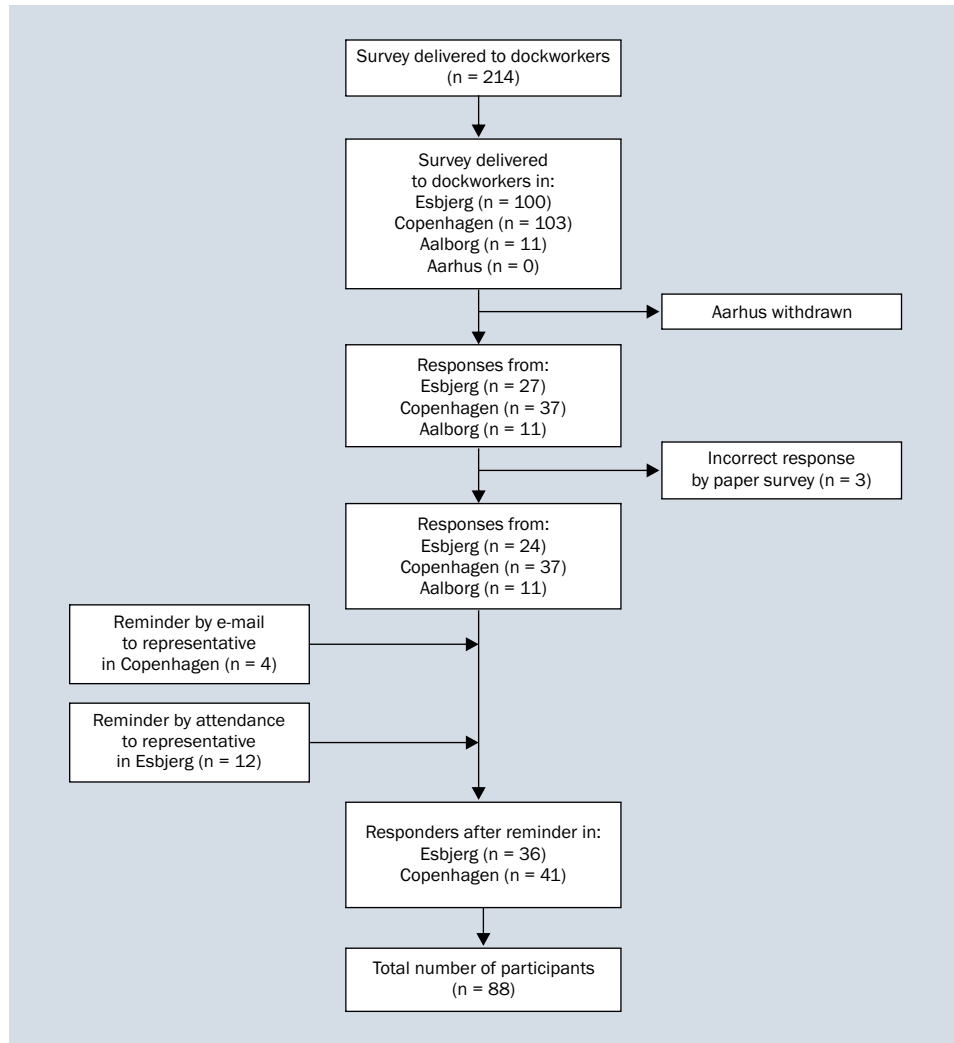


Figure 1. Study participation flow of participants in questionnaire survey

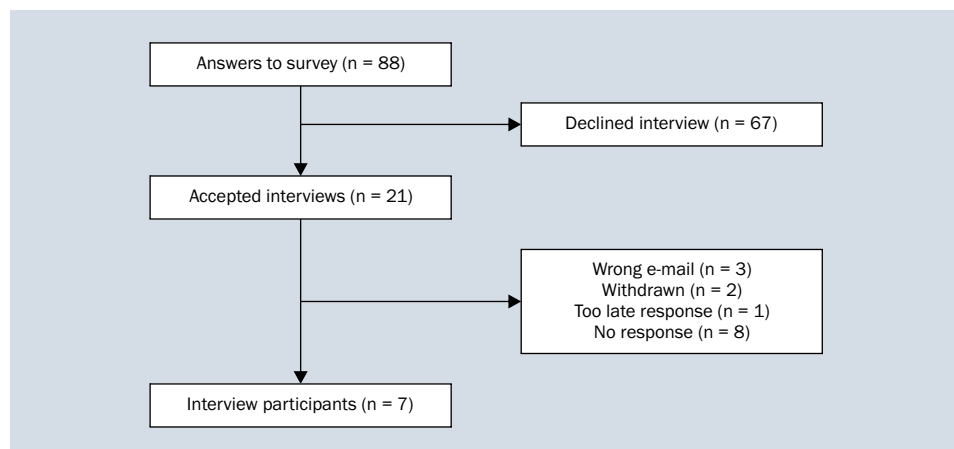


Figure 2. Study participation flow of interview participants

Table 1. Response rate calculation

Cities	Issued questionnaires	Number of replies	Response rate
Copenhagen	103	41	39.8%
Aalborg	11	11	100%
Esbjerg	100	36	36%
In total	214	88	41%

ible working hours (50%). Other characteristics are shown in Table 2.

SELF-PERCEIVED SAFETY

According to data (as shown in Table 3) concerning self-perceived safety, 88.8% of the dockworkers agreed on feeling confident about the safety at the workplace. 95.4% of the dockworkers agreed they helped each other to work safely, and 92.1% agreed they tried to find a solution together if a safety problem occurs.

Interviewee no. 1 indicated that the feeling of safety occurs at the workplace because of good teamwork, but the interviewee also stated that the material conditions were getting worse: *“I am very comfortable when I go to work, because there is an incredibly good cohesion, there is a lot of help from my colleagues, whereas [my] faith in the quality of the work materials, gets worse.”* – Interviewee no. 1

Interviewee no. 3 agreed on the fact that the feeling of safety is related to the colleagues, and that trust plays a central role: *“The safety is high. It is a very hazardous workplace... but it is the people who are employed at the workplace, they are really competent people... And I trust them 100%, so that makes me feel safe.”* – Interviewee no. 3

Regarding whether minor accidents are a part of the everyday work life, 62.9% disagree, and 79.5% disagree with the statement that breaking safety rules is necessary to get work done in time (Table 3).

PSYCHOSOCIAL WORK ENVIRONMENT

Tables 4 to 8 show all data concerning the status of the dockworkers' feeling about the psychosocial work environment including job satisfaction, major changes, feelings of stress, and relations to colleagues and the management. Only the answers which are considered most relevant are mentioned in these results, but more data are shown in the tables.

Sixty per cent of the surveyed dockworkers answered that they were affected by the job uncertainty, but only 19.8% found it stressful not to be guaranteed work every morning. 57.5% of participants agreed that major changes had happened during the last year (Table 4). The way the management had handled the changes was reported to be somewhat unsatisfactory. 58.2% felt to a low extent that

Table 2. Characteristics of the participants

	%	n
Age	100	86
25–34	11.4	10
35–44	13.6	12
45–69	72.7	64
Conditions of employment	100	87
Day by day employment	46	40
Permanent employment	40.2	35
Other	18.4	16
Work field	100	87
Responsible for security	63.2	55
Stacking cones and twist locks	63.2	55
Lashing of containers	62.1	54
Ro/Ro	72.4	63
Purge by the bulk	8	7
Hatchclerk (controller and responsible for safety)	2.3	2
Driving machines in bulk (excavator + front loader)	18.4	16
Ship to shore crane driver (container bridge)	20.7	18
Transportation of containers with terminal tractors, reach stackers, straddle carrier	52.9	46
Stripping/unstrapping, lashing of containers at the storehouse	6.9	6
Reception and delivery of containers to lorry (reach stackers, straddle carrier)	21.8	19
Transportation from the port to customers (terminal tractors or mover)	21.8	19
Other	17.2	15
Reasons for working as a dockworker	100	88
The work is exciting	64.8	57
My family has always worked here, so it was the obvious choice	20.5	18
I was inspired by my acquaintance	28.4	25
The salary is good	63.6	56
The flexible working hours	50	44
I did not fit in elsewhere	4.5	4
It was the easy choice	3.4	3
It is an investment in my future	3.4	3
I see it as a challenge	27.3	24
Other	6.8	6

Table 3. Effects on self-perceived safety (n = 88)

Variable	Agree	Disagree
We help each other to work safely	95.4% (n = 84)	4.5% (n = 4)
If there is a safety problem, we try to find a solution (n = 89)	92.1% (n = 82)	7.9% (n = 7)
I feel like listened to if in connection to accidents (n = 86)	91.8% (n = 79)	8.2% (n = 7)
I feel confident about the safety of my workplace (n = 89)	88.8% (n = 79)	11.2% (n = 10)
Our work is unsuitable for "sissies" (n = 89)	58.4% (n = 52)	41.6% (n = 37)
Minor accidents are a normal part of our daily work (n = 89)	37.3% (n = 33)	62.9% (n = 56)
Breaking safety rules to get work done in time is necessary	20.45% (n = 18)	79.5% (n = 70)

Table 4. Effects on the psychosocial work environment (n = 88)

Variable	Yes	No
Major changes have happened at the workplace in the last year (n = 87)	57.5% (n = 50)	42.5% (n = 37)
Exposed to bullying at work, within the last 12 months	29.5% (n = 26)	70.5% (n = 62)
Exposed to threats at work, within the last 12 months	23.4% (n = 21)	76.1% (n = 67)
Discriminated at work because of gender, age, ethnicity, religion or other within last 12 months	14.7% (n = 13)	85.2% (n = 75)
Exposed to sexual harassment at work, within the last 12 months	1.1% (n = 1)	98.9% (n = 87)
Exposed to physical violence at work, within the last 12 months	0% (n = 0)	100% (n = 88)

Table 5. Effects on the psychosocial work environment (n = 88)

Variable	Agree	Disagree
Thriving well in changeable working hours and shifts (n = 87)	85.1% (n = 74)	11.4% (n = 13)
The job uncertainty does not affect my mood (n = 85)	60% (n = 51)	40% (n = 34)
Time pressure affects my mood negatively (n = 86)	25.6% (n = 22)	74.4% (n = 64)
It is stressful, not to be guaranteed work when attending each morning (n = 81)	19.8% (n = 16)	80.2% (n = 65)
Due to emotional problems, I have not achieved as much at my job as I would like (n = 85)	11.8% (n = 10)	88.2% (n = 75)

the management adequately informed about new changes. 67.3% did not feel adequately involved in the changes. 23.6% answered that they were generally satisfied with how changes were handled by the management (Table 6).

According to interviewee no. 6 the dockworkers are informed, but are not as informed as desired and there is a lack of involvement: "...they call it *dialogue meeting*, it is *monologue*, so... we do not have much to say, we just have to listen... Lack of information may create some conflicts sometimes." — Interviewee no. 6

Interviewee no. 2 agreed on the statement that management's communication with employees is inadequate: "...Occasionally, we have the opinion that higher up in the system, the information does not drift down to us as quickly as it should." — Interviewee no. 2

Dockworkers had mixed feelings about treatment and respect from the management. 43.2% of the participants

rarely feel fairly treated by the management, and 51.1% often feel fairly treated. 54.5% feel respected by the management and 40.9% feel there was a good cooperation between management and employee (Table 7).

Another factor that was shown to affect the psychosocial work environment was the relation and cooperation with the colleagues. 77.3% of the dockworkers feel there is a sense of unity and cohesion among colleagues. 81.8% answered that colleagues will keep each other informed about important tasks, to accomplish the job well. When a problem occurs, 86.4% answered that the colleagues were good at working together to find solutions. 74.2% trust their colleague's ability to do the job well (Table 7).

In response to items regarding stress, there were mixed opinions (Table 8), with 7.9% often feeling stressed within the last 2 weeks and 38.6% never feeling stressed. Furthermore, 36.4% felt they often had to work very fast. The

Table 6. Effects on the psychosocial work environment (n = 88)

Variable	To a great extent (n)	Partial (n)	To a low extent (n)
The tasks are meaningful	87.5% (77)	10.2% (9)	2.2% (2)
Motivated and committed to my job	84.1% (74)	12.5% (11)	3.4% (3)
Proud to have a job at this workplace	80.7% (71)	15.9% (14)	3.4% (3)
This job gives me confidence and job satisfaction	79.5% (70)	15.9% (14)	4.5% (4)
My workplace inspires me to do my best (n = 89)	68.5% (61)	23.9% (21)	7.9% (7)
I'm telling friends that my workplace is a good place to work	67% (59)	21.6% (19)	11.4% (10)
This job is interesting and inspiring	61.4% (54)	35.2% (31)	3.4% (3)
I would recommend others to apply for a job at this workplace	45.5% (40)	36.4% (32)	18.2% (16)
The reasons for implementing the changes is understandable (n = 55)	30.9% (17)	27.3% (13)	45.5% (25)
The job takes so much of my time that it affects my personal life	27.3% (24)	43.2% (38)	29.5% (26)
Generally satisfied with the way the management has handled changes (n = 55)	23.6% (13)	18.2% (10)	58.2% (32)
The job takes so much of my energy that it affects my personal life	22.7% (20)	40.9% (36)	36.4% (32)
Employees have been adequately involved in changes (n = 55)	14.5% (8)	18.2% (10)	67.3% (37)
The management has adequately informed employees about changes (n = 55)	12.7% (7)	29.1% (16)	58.2% (32)
Conflicts arise in my personal life because of the job uncertainty (n = 83)	1.2% (1)	14.5% (12)	79.5% (70)

Table 7. Effects on the psychosocial work environment (n=88)

Variable	Never (n)	Rare (n)	Often (n)
When problems, all colleagues are good at working together and find a common solution	0% (0)	13.6% (12)	86.4% (76)
To accomplish the job well all colleagues keep each other informed about important tasks	2.3% (2)	15.9% (14)	81.8% (72)
Colleagues generally trust each other	3.4% (3)	18.2% (16)	78.4% (69)
There is a sense of unity and cohesion amongst colleagues (n = 89)	3.4% (3)	19.3% (17)	77.3% (68)
Trusting colleagues' ability to do the job well (n = 89)	1.15% (1)	24.7% (22)	74.2% (66)
Expressing opinions and feelings to your closest colleagues	3.4% (3)	27.3% (24)	69.3% (61)
All colleagues agree on what work tasks is the most important	3.4% (3)	27.3% (24)	69.3% (61)
Feeling respected by the management	11.4% (10)	34.1% (30)	54.5% (48)
Treated fairly by management	5.7% (5)	43.2% (38)	51.1% (45)
The management encourage all employees to come up with ideas for improvement	25% (22)	25% (22)	50% (44)
Conflicts are resolved fair	3.4% (3)	50% (44)	46.7% (41)
Employees and managers are good at working together to improve the workstream	11.4% (16)	40.9% (36)	40.9% (36)
Work performance is recognized and appreciated in at the workplace	12.5% (11)	47.7% (42)	39.9% (35)
When making important decisions at the job there is a clear explanation	18% (16)	42.7% (38)	39.3% (35)
Suggestions for improvements are dealt with seriously by the management (n = 89)	26.9 (24)	35.9% (32)	37.1% (33)
Feeling working under time pressure	22.7% (20)	59.1% (52)	18.2% (16)
Variable	Scale 1-4	Scale 5-7	Scale 8-10
General job satisfaction on a scale from 1 to 10	1.1% (1)	22.7% (20)	76.1% (67)

Table 8. Effects on the psychosocial work environment (n = 88)

Variable	Never (n)	Rare (n)	Sometimes (n)	Often (n)
When working, there are relationships that are emotionally difficult to handle	61.4% (54)	28.4% (25)	9.1% (8)	1.25 (1)
I do not achieve all tasks (n = 89)	56.2% (50)	37.1% (33)	5.6% (5)	1.1% (1)
Lagging behind with work	53.4% (47)	40.95 (36)	5.7% (5)	0% (0)
The job causes emotionally demanding situations	52.3% (46)	32.95 (29)	12.5 (11)	2.3% (2)
I have deadlines that are difficult to comply with (n = 89)	43.8% (39)	42.7% (38)	13.5% (12)	0% (0)
Feeling stressed within the last 2 weeks	38.6% (34)	26.1% (23)	27.3% (24)	7.9% (7)
Contact with people who are reluctant or aggressive (n = 89)	36.4% (32)	38.2% (34)	22.5% (20)	3.4% (3)
I get unexpected tasks that puts me under time pressure	31.8% (28)	43.2% (38)	20.5% (18)	4.5% (4)
The pace of work so high that it affects the quality of the work	22.7% (20)	55.7% (49)	18.2% (16)	3.4% (3)
It is necessary to work very fast	2.3% (2)	11.4% (10)	50% (44)	36.4% (32)
Variable	No stress (n)	Work (n)	Personal life (n)	Work and personal life (n)
The main source of feeling stressed (n = 89)	46.1% (41)	11.2% (10)	3.4% (3)	39.3% (35)

majority (74.4%) did not feel that time pressure affects their mood negatively (Table 5). 59.1% have rarely felt that they are working under time pressure, 22.7% never felt they worked under time pressure (Table 7). The main source of feeling stressed (39.3%) was a combination of both work- and personal life factors, 46.1% have not been feeling stressed at all.

According to the interviews, working at the dock is not stressful by itself, but some tasks can be stressful, and the more experience you have, the less stress you feel:

"...I feel that I can't keep up... I'm loading cars on and off, no matter when you look, there are always 15 cars in the queue. The first many years... it annoyed me... but today... if there were no cars queueing, I wouldn't have any work." – Interviewee no. 1

"...Fortunately, not so often [stressed]... when we hand over containers to the cargo trucks... we are two machines loading and unloading... sometimes it's really busy... There's a lot of rotation in the work tasks at the workplace, so you don't have that specific task as often." – Interviewee no. 6

Interviewee no. 7 reported not feeling any stress at work: *"I do not take the work with me home. So, in this way, I will not be stressed at all." – Interviewee no. 7*

When dockworkers were asked in the survey about their general job satisfaction on a scale of 1–10, 76.1% answered 8 or more, and 22.7% rated their job satisfaction between 5 and 7 (Table 7). The 7 interviewees all rated their job satisfaction between 7 and 10. However, in response to the question of what could improve job satisfaction, all the interviewees commented on the desire for more information and involvement from the management.

DISCUSSION

According to World Health Organization (WHO) a good psychosocial work environment is based on interactions between several factors, namely the job task itself, the physical conditions, the social aspect in the work environment, the role of the management, and the employment conditions [25]. This study found that 88.8% of the surveyed dockworkers agreed on feeling safe at work, even though interviewees agreed that it is a dangerous job, and the material conditions have worsened.

This is similar to the findings of a previous study that dockworkers are exposed to a hazardous work environment every day [9]. In the study, Wang et al. [9] stated that even though there are many prevention interventions, further prevention measures are needed to reach the goal of total prevention of occupational hazards. The article emphasizes many physical prevention strategies, but also training needs among the employees. This study had similar findings, with several of the interviewees stating that hazardous physical work tasks, like lashing containers down, are self-taught. Despite this, dockworkers still reported a strong feeling of safety.

The reason for the feeling of safety is found to be primarily due to colleagues. Safety at the harbour relies heavily upon the dockworkers' ability to do their job well, as their different work tasks depend on each other [26]. 95.4% agreed that everyone help each other to work safe. Furthermore, there is a feeling of cohesion and sense of unity at the work place, which are conducive to a positive psychosocial work environment [6]. 76.1% put job satisfaction on 8 or more on a scale of 1–10 which indicates that the majority of dockworkers are very satisfied with their job. This is also similar

to other literature which states that a safe work environment is dependent on collaboration among dockworkers, due to the hazardous work tasks involved [5, 6, 26].

When considering the role of the management, which WHO states is an important factor when looking at the psychosocial work environment [25], dockworkers have mixed opinions. 23.6% agreed on being satisfied with the management, while 58.2% felt to a low extent that the management adequately informed about changes. 67.3% did not feel they have been involved when changes need to be made. Lack of involvement is one of the factors which, according to Karasek [27, 28], might increase the risk of a bad psychosocial work environment.

Karasek has developed a theory called the Job-Demand-Control-(support) model (JDACS-model). It helps to describe how the number of tasks at work and the amount of control affect the employee in relation to stress, and how support from people around might affect the feeling of work-related stress. An important point in this model is that a high degree of job autonomy and influence at work may prevent from stress related to the job, even when job demands are high [27–29].

Based on Karasek's model, there appears to be a great amount of support among the dockworkers, which will help prevent a bad psychosocial work environment [27, 28]. Physical and mental demands at the job were investigated in a maritime port in Brazil in 2016 [30]. The study showed 48.7% of the study population felt they had a high level of mental strain related to their job as a dockworker, which had a significant effect on the overall workload [30]. For comparison, this study found that 59.1% rarely felt they were working under time pressure and 22.7% never felt they worked under time pressure. 38.6% never felt stressed, while 7.9% answered they were often stressed within the last 2 weeks. 56.2% never felt they did not complete all tasks. According to Karasek's JDACS-model, these results show that dockworkers are not exposed to excessively high job demands compared to what they can handle, which means the job demands are balanced, and dockworkers are therefore not at risk for a bad psychosocial work environment [27, 28].

The main limitation of this study is its cross-sectional design, in which the association between self-perceived safety and psychosocial work environment could not be demonstrated [12, 31]. However, the results indicate that there is a high level of self-perceived safety and a good psychosocial environment. Another limitation is the sampling method and the small sample size used in this study which may affect the generalisability of the findings of this study. However similar results were obtained in this study on both quantitative and qualitative methods, which arguably may strengthen the results and increase the generalisability

[13, 14, 32, 33]. Also non-response bias has to be taken into account because of the fact that some potential important responses might be missing out as there might be dockworkers who are not satisfied with their job and might find it easier to refuse to respond to the survey. This non-response bias is taken into account by sending out reminders by email to increase the response rate.

CONCLUSIONS

Overall, the dockworkers seemed to be satisfied with the safety at the work place due, primarily, to faith in their colleagues. Trust amongst colleagues, a feeling of cohesion and sense of unity in the workplace, is a big part of a dockworkers' work life, which also is an important part of the psychosocial work environment. Based on Karasek's JDACS-model it can be concluded from this study that dockworkers in Denmark are satisfied with their level of safety in the workplace and, furthermore, a positive psychosocial work environment exist throughout Danish harbours. Due to the small sample size and the distribution of answers, it was not possible to measure an association between the self-perceived safety and psychosocial work environment. Further research is recommended to investigate other risk factors and focus on a greater study population, as this study must be seen as a pilot study. In addition, further research can add some focus on the role of the management since it is found to be one of the great concerns from the survey.

ACKNOWLEDGEMENTS

This article is based on the unpublished Thesis for the MSc Public Health degree. Both authors contributed equally to the idea, the protocol, the data collection, analysis of data and writing of all sections of the article.

We thank our supervisor Olaf Chresten Jensen for skilful technical assistance and guidance. We are also grateful to the dockworkers for their keen participation in this study.

REFERENCES

1. Chastang J, Vermeylen G. Exposure to psychosocial work factors in 31 European countries. 2012;(March):196–202.
2. Hjerteforeningen. Fakta om hjerte-kar-sygdom i Danmark [Internet]. Hjerteforeningen. 2019. <https://hjerteforeningen.dk/alt-om-dit-hjerte/noegletal/>.
3. Lund T, Labriola M, Christensen KB, et al. Physical work environment risk factors for long term sickness absence: prospective findings among a cohort of 5357 employees in Denmark. *BMJ*. 2006; 332(7539): 449–452, doi: 10.1136/bmj.38731.622975.3A, indexed in Pubmed: 16446280.
4. Stressforeningen. Stress og statistik [Internet]. Stressforeningen. 2019. <http://www.stressforeningen.dk/stress-og-statistik/>.
5. Hansen LA, Slyngborg M. Havnen som arbejdsplads. "man skal ikke være lavet af glas" — arbejdskulturer på havnen. *Kursen*. 2018: 93–112.

6. Hyllested H. Arbejdsmiljø På Havne. 201. http://www.bartransportengros.dk/Files/Billeder/BAR_Transport/Arbejdsmiljoe-havne-2012.pdf.
7. Cezar-vaz MR, Capa M, Almeida V. Casual Dock Work: Profile of Diseases and Injuries and Perception of Influence. on Health. 2014: 2077–2091.
8. Risk E, Report O. Expert forecast on emerging psychosocial risks. 2007.
9. Wang Y, Zhan S, Liu Y, et al. Occupational hazards to health of port workers. *Int J Occup Saf Ergon*. 2017; 23(4): 584–588, doi: [10.1080/10803548.2016.1199501](https://doi.org/10.1080/10803548.2016.1199501), indexed in Pubmed: [27310086](https://pubmed.ncbi.nlm.nih.gov/27310086/).
10. Thisted J. Den kvantitative forskningsmetode 1. In: *Forskningsmetode i raksis – rojektorienteret videnskabsteori og forskningsmetodik*. 2nd ed 2018: 127–68.
11. Madsen M, Strandberg-Larsen K. Den eidemiologiske forskningsmetode. In: *Forskningsmetoder i folkesundhedsvidenskab*. 4th ed. 2011: 243–282.
12. Szklo M, Nieto FJ. Basic study designs in analytical epidemiology. In: *Epidemiology – beyond the basics*, 3rd ed. 2014: 1–38.
13. Christensen U, Nielsen A, Schmidt L. Det kvalitative forskningsinterview. In: *Forskningsmetoder i folkesundhedsvidenskab*, 4th ed 2011: 61–89.
14. Robson C, McCartan K. Desk-based research. In: *Real World Research*. 4th ed. Wiley 2017: 82–100.
15. Robson C, McCartan K. Flexible designs. In: *Real World Research*. 4th ed. Wiley 2017: 145–173.
16. Robson C, McCartan K. Ethical and political considerations. In: *Real World Research*. Wiley 2017: 205–240.
17. Kokholm T. Danmarks største havne [Internet]. *Nyhedsmagasinet Danske Kommuner*. 2014. <http://www.danskekommuner.dk/Artikellarkiv/2014/Magasin-22/Danmarks-storste-havne/>.
18. DH Danske Havne. Havnepolitisk redegørelse 2018 [Internet]. DH Danske Havne. 2018. <https://www.danskehavne.dk/wp-content/uploads/2018/04/Havnepolitisk-Redegørelse-2018.pdf>.
19. Thomas SJ. Pilot testing the questionnaire. In: *Using Web and Paper Questionnaires for Data-Based Decision Making*. 2004.
20. Robson C, McCartan K. Surveys and questionnaires. In: *Real World Research*. 4th ed. Wiley 2011: 243–283.
21. Robson C, McCartan K. Interviews and focus groups. In: *Real World Research*. 4th ed. 2017: 284–306.
22. Kvale S, Brinkmann S. Udførelse af interview In: *Interview 3rd ed*. 2014: 177–198.
23. Kvale S, Brinkmann S. Interviewvariationer In: *Interview*. 2014: 197–218.
24. Kvale S, Brinkmann S. Interviewkvalitet In: *Interview 3rd ed*. 2014: 219–234.
25. Health JIWC on O. Psychosocial factors at work: recognition and control [Internet]. *Safety And Health*. 1984. 81. http://www.who.int/occupational_health/publications/ILO_WHO_1984_report_of_the_joint_committee.pdf.
26. International Labour Organization. Hazardous work. International Labour Organization. 2019.
27. Karasek R. Job Demands, Job Decision Latitude, and Mental Strain: Implications for Job Redesign. *Administrative Science Quarterly*. 1979; 24(2): 285, doi: [10.2307/2392498](https://doi.org/10.2307/2392498).
28. Karasek R, Theorell T. *Healthy Work: Stress, Productivity, and the Reconstruction Of Working Life*. Basic books 1992.
29. Häusser J, Mojzisch A, Niesel M, et al. Ten years on: A review of recent research on the Job Demand–Control (-Support) model and psychological well-being. *Work & Stress*. 2017; 24(1): 1–35, doi: [10.1080/02678371003683747](https://doi.org/10.1080/02678371003683747).
30. Cezar-Vaz MR, Bonow CA, Almeida MC, et al. Workload and associated factors: a study in maritime port in Brazil. *Rev Lat Am Enfermagem*. 2016; 24: e2837, doi: [10.1590/1518-8345.1347.2837](https://doi.org/10.1590/1518-8345.1347.2837), indexed in Pubmed: [27901222](https://pubmed.ncbi.nlm.nih.gov/27901222/).
31. Porta M. A dictionary of epidemiology. In: *A dictionary of epidemiology*. 2014.
32. Thisted J. Den kvalitative forskningsmetode 1. In: *Forskningsmetode i raksis – rojektorienteret videnskabsteori og forskningsmetodik*. 2nd ed. 2018: 195–246.
33. Robson C, McCartan K. Fixed designs. In: *Real World Research*. 4th ed. 2017: 101–144.