RELATIONSHIP BETWEEN DRINKING WATER HABITS AND WORK CLIMATE PERCEPTIONS WITH DEHYDRATION INCIDENCE IN SHIPPING COMPANIES' WORKERS

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ABSTRACT

Introduction: Workers in the maintenance and repair division's shipping division work in outdoor physical environments, which get hot temperatures from the environment. They cause excessive sweating while working and can cause dehydration if not drinking enough water. **Methods:** This study aimed to analyze the relationship between drinking habits and work climate perception with dehydration status in shipping companies' workers. The research method was analytic observational, with a cross-sectional design in 2019 in one of the shipping companies with a sample size of 49 workers who were selected using simple random sampling from 55 worker populations. The independent variables included respondent characteristics, drinking water consumption habits, and work climate perceptions, while the dependent variable was dehydration status. Dehydration status among workers was measured base on the specific gravity of urine measured in the laboratory, and the working climate was measured using a heat stress monitor. **Result:** The results showed that 85.71% of workers had minimum dehydration status, and 14.29% had significant dehydration. Then, there was a meaningful relationship between drinking water habits and dehydration status ($r = -0.320$ and $p = 0.025$). There was also a relationship between workers' work climate perceptions and dehydration status ($r = -0.283$ and $p = 0.049$). **Conclusion:** The relationship showed a weak negative meaning that the less habit of drinking water among workers, the higher the dehydration status of the workers. The more disturbed they perceive the working climate; the less dehydrated status of workers will be. So it can be ignored that there were drinking habits and the work climate perceptions with dehydrated status in shipping companies' workers.

Keywords: dehydration status, drinking habits, work climate perceptions.

INTRODUCTION

Nowadays, many shipping companies in Indonesia are run. They develop fastly shipping companies develop. There are many divisions in shipping companies. One of the divisions is the maintenance and repair division, the activities of this division are maintaining and repairing the ship, ranging from a commercial ship, submarines, warship, TNI ship, navy, and others. The maintenance and repairing division is the division that has more routine activities with faster processing time than other divisions. The routines in maintaining and repairing, there is a yearly routine even it can be finished until three years. That routine activity causes the workers to get pressure or stressor continuously from their job and work environment so that many projects must be done with a short processing time. As a result, the maintenance and repair division trigger to have many activities. Dense activities, both indoor and outdoor, will cause some health risks. One of the risks is losing body fluids which can lead to dehydration.

Dehydration is the condition when the fluids inside the body are getting deficit because the total excreted fluid is more than the amount that consumes a little water. The body can be dehydrated when it loses many fluids (Rismayanthi, 2012). Bad drinking habits can lead to dehydration because they are not proportional to the excretion of fluids from the body. Drinking water is vital for every human being, especially for workers who do more activities, someone

©2022 IJPH. License doi: 10.20473/ijph.vl17il.2022.61-72 Received 29 October 2020, received in revised form 20 November 2020, Accepted 25 November 2020, Published online: April 2022

will get dehydration if they lack drinking water.

There are still many workers who ignore drinking water habits while working, which causes dehydration. It is in line with the research done by (Huda et al., 2018) showed a significant relationship between mineral water consumption with dehydration cases among workers in tofu factories, which correlation showed (r) 0,882 or very strong.

Besides the lack of drinking water among workers and dense work activities, dehydration can be caused by work climate factors. Workers experience rapid evaporation of fluids in their bodies. Humidity, radiant heat, air temperature, and air velocity are part of the working climate (Suma'mur, 2009). As the maintenance and repair divisions, technical workers work in outdoor physical environments, which are getting to heat stress from the environment, which can lead to excessive sweating while working and can cause dehydration if they do not drink enough water. Moreover, the workers' perception or feeling of the hot temperature in the workplace can be fatal if they cannot control it. Perception can appear because of the condition in the hot work environment. It can be evidenced by the results of measuring the working climate in the work environment. According to (Sayuti and Susanto, 2017), hot temperatures in the workplace can interfere with the workers' comfort while working.

Based on (Soedirman and Suma'mur, 2014), the high heat exposure for the long term causes the body to secrete sweat to reduce the water inside the body. The result of the research was done by (Puspita and Widajati, 2017) at a PT. X in Sidoarjo shows that work climate correlates with dehydration in workers. The workers who experience dehydration are obtained as much as 87.1% with the category of light, moderate, and exceeding TLV. The work climate in the workplace needs to be considered to avoid dehydration among workers even though the workers' workplace has adapted to the work climate.

Based on the problem identification found, this research aims to analyze the age difference with dehydration status, analyze the relationship between drinking habits with dehydration status among workers in the shipping company, and analyze the relationship between work climate perceptions with dehydration status among workers in a shipping company.

METHODS

This research was quantitative research in which the collected data was obtained by direct observation in the workplace. The researcher did not give any treatment or intervention on the research subject. Based on the analysis, this research was analytical because hypothesis testing used data analysis with the statistical method and results from a conclusion that can be generalized.

Based on the scope of research, this research was field research because the research data was carried out directly in the workplace. This research used a cross-sectional design based on the timed approach because the research data was conducted at one specific time. The population in this research was all technician workers in the Production Department, Maintenance and Repair Division of shipping companies and as many as 55 workers. To determine the sample size in this research was probability sampling with the simple random sampling method. Based on the determination on the sample size determined using the Lemeshow formula, as follows:

$$n = \frac{z^2_{1\frac{\propto}{2}} P(1-P)N}{d^2(N-1) + z^2_{1\frac{\propto}{2}} P(1-P)}$$

$$n = \frac{1{,}96^2 \times (0{,}5(1-0{,}5)55)}{0{,}1^2(51-1) + 1{,}96^2 \times 0{,}5(1-0{,}5)}$$

$$n = \frac{3{,}8416 \times 13{,}75}{0{,}125 + 0{,}9604}$$

$$n = \frac{52{,}822}{1{,}0854}$$

$n =$ 48,665 ≈ 49 people

Description:

n = Sample size

N = Population size

$z^2_{1\frac{\propto}{2}}$ = Z value on the degree of significance (95% = 1.96)

P = The proportion of a particular case to the population (50% = 0.5)

d = Degree of deviation to the desired population (5% = 0.05)

So the samples obtained in this study were 49 technician workers in the Maintenance and Repair Division of Shipping Companies.

Data was gained in 2019 at the shipping companies on the maintenance and repair division. The independent variable was workers' characteristics such as age, drinking water habit, and work climate perception. Meanwhile, the dependent variable was dehydration status.

Dehydration status among workers was measured based on the specific gravity of urine measured in the laboratory. The categorization of dehydration was according to the urine-specific gravity test results. The status was well-hydrated if the BJU value was <1.010 g/dl. If the BJU value was 1.010-1.020 g/dl, the status was minimal dehydration. If the BJU value was 1.021-1.030 g/dl then the status was significant dehydration, and if the BJU value was >1030 g/dl then it has the status of seriously dehydration (Dieny and Putriana, 2015).

A questionnaire was used to find out the characteristics of workers contained age, drinking water habits with categories of insufficient, sufficient, and more than using reference from (PERDOKI, 2014) and (Suma'mur, 2009). The standard was categorized as less if the drinking water consumption was <2.8 liters per day, enough if 2.8 liters per day, and more if >2.8 liters per day. The working climate was given the perception of being disturbed and undisturbed. This was based on the measurement of the working climate in the Shipping Company Maintenance and Repair Division.

The work climate in the company can be measured. It used a tool Quest Type Quest Temp 36 heat stress monitor at the measurement location consisting of welding work, fitter plate work, AS propeller work, axle and steering work, machine tool work, diesel machine work, and piping work. The results obtained will be compared with TLV working climate in the workplace.

The resulting research data were analyzed using a statistical test to find out the relation between a variable and based on the objectives. Then, the test used was two-way ANOVA to find out the differences in each group and using correlation spearman that can be determined was there any relation between each variable. This research has got ethical approval from the ethics section of the Ethics Commission of the Faculty of Public Health, Universitas Airlangga Number: 156 / EA / KEPK / 2019.

RESULT

The workers' characteristics assessment results in shipping companies included age, dehydration status, drinking water habit, and work climate perception, presented in Table 1. Based on Table 1, it shows that most of (40.8%) respondents at 26-35 years have minimum dehydration status approach (85.71%), enough drinking water habit at (48.98%), and undisturbed perception on work climate at (73.47%).

Meanwhile, based on Table 2, the total respondents aged <25 years have a minimum dehydration status of 15 (83.33%) respondents for the rest is significant dehydration. At the age of 26-35 years, out of a total of 20 respondents, 17 (85%) of them had minimum dehydration status, while at the age of 36-45 years, out of a total of 5 respondents, 4 (80%) of them had minimal dehydration status. Also, at more than 46 years, out of 6 (100%) respondents had a minimum dehydration status. The statistical test result used two-

way ANOVA with a significant value of 0.377 > α 0.05 shows there was no differentiation between workers' age and workers' dehydration status.

Table 1. Characteristics of Respondents

Characteristics	f	%
Age (Years)		
<25	18	36.7
26-35	20	40.8
36-45	5	10.2
>46	6	12.2
Dehydration status		
Minimal dehydration	42	85,71
Significant dehydration	7	14,29
Drinking habits		
Less	17	34,70
Enough	24	48,98
More	8	16,32
Work Climate Perceptions		
Yes	13	26,53
No	36	73,47

Table 2. Workers Age Differentiation with Dehydration Status

Variable	Dehydration status		Total	p	(r)
	Minimal Dehydration	Significant Dehydration			
Age					
<25	15 (83,33%)	3 (16,67%)	18		
26-35	17 (85%)	3 (15%)	20	0,377	0,17
36-45	4 (80%)	1(20%)	5		
>46	6 (100%)	0 (0%)	6		

Table 3. Relationship between Drinking Habits and Dehydration Status

Variable	Dehydration Status		Total	p	(r)
	Minimal Dehydration	Significant Dehydration			
Drinking-Water Habits					
Less	12 (70,59%)	5 (29,41%)	17	0,025	-0,320
Adequate	22 (91,7%)	2 (8,3%)	24		
More	8 (100%)	0 (0%)	8		

Based on table 3, 12 out of 17 respondents had less mineral water drinking habits, which means that (70.59%) of respondents had minimum dehydration. In comparison, 22 out of 24 respondents had enough drinking water habits meaning that (91.7%) had minimum dehydration status. The respondents who had more than 100% drinking water habit had minimum dehydration status. The Spearman test result showed that the p-value is 0.025 < α 0.05, which means there was a correlation. The (r) coefficient value was -0.320, which means drinking water habit among workers has a weak negative relationship. The negative value means less mineral water drinking habit on workers the high dehydration status among workers in shipping companies.

Table 4 on work climate perception shows that 9 out of 13 respondents were

disturbed by work climate, as much as (69.23%) among them had minimum dehydration meanwhile 33 out of 36 respondents responded no on the work climate perception, (91.67%) among them had minimum dehydration status. Using the Spearman test showed a p-value of 0.049 < α 0.05, which means there was a correlation and the obtained coefficient (r) value -0.283. The work climate perceptions with dehydration status have a weak negative relationship. A negative value means that the more disturbed the perception of the work climate was, the lower the dehydration status of shipping company workers.

Based on table 5, 17 respondents have fewer drinking water habits. As much as 7 (41.18%) of them perceive being disturbed by the working climate. Twenty-four respondents have enough drinking water habits, and 5 (20.83%) perceive being disturbed. Eight respondents have more drinking water habits. Only 1 (12.5%) of respondents have a disturbed perception of the work climate. The p-value was 0.312, indicating no relationship between drinking water habits and work climate perceptions.

Meanwhile**,** based on Table 6, the results showed that the measurement of the working climate obtained from several points was carried out in the welding work. The WGBT was 29.7˚ C, and the fitter plate work was 29.7˚C, the AS propeller work was 29.6˚C. For axle and steering work, a WGBT was 28.7˚C, and a WGBT was 29˚C for machine tools. However, a WGBT was 29.6˚C for a diesel mechanic. Piping works were 29.6˚ C. Besides, 8 hours of work were obtained. The metabolite rate was classified as moderate because the workers were doing a medium category of work. There was construction work (Ministerial Regulation No.5 of 2018 concerning Occupational Safety and Health at Work Environment) that, based on the measurement results and workers' working hours, was obtained WGBT NAV of 28˚C. Thus, all measurement locations showed that it exceeded the approved limit (exceeds the TLV).

Table 4 The Relationship Between Work Climate Perceptions and Dehydration Status

Variable	Dehydration Status		Total	p	(r)
	Minimal Dehydration	Significant Dehydration			
Work Climate Perceptions					
Yes	9 (69,23%)	4 (30,77%)	13	0,049	-0,283
No	33 (91,67%)	3 (8,33%)	36		

Table 5 The Relationship between Drinking Water Habits and Work Climate Perceptions

Variable	Work Climate Perceptions		Total	p	(r)
	Yes	No			
Drinking-Water Habits					
Less	7 (41,18%)	10 (58,82%)	17	0,312	-0,145
Adequate	5 (20,83%)	19 (79,17%)	24		
More	1 (12,5%)	7 (87,5%)	8		

Table 6 Measurement Results *in Heat stress*

Location Measurement	Sb (^{0}C)	Sk (^{0}C)	Sg (^{0}C)	RH (%)	WGBT (˚C)	Description
The Welding Works	28	32,2	33,4	73	29,7	>NAB 28 ^{0}C
The Fitter Plate Works	28,1	32,3	33,3	74	29,7	>NAB 28 ^{0}C
The AS Propeller Work	28,1	32,4	33,2	72,5	29,6	>NAB 28 ^{0}C
Axle and Steering Work	27,1	32,3	32,5	65,5	28,7	>NAB 28 ^{0}C
For Machine Tools	27,3	32,4	34,7	67	29	>NAB 28 ^{0}C
For Diesel Machine	28,3	32,4	33,3	70,5	29,6	>NAB 28 ^{0}C
Piping Works	28	32,3	33,2	73	29,6	>NAB 28 ^{0}C
Airflow velocity	0,1-1 (m/dt)					

DISCUSSION

Based on the research result done at shipping companies' maintenance and repair divisions in 2019, it was found out that all man workers at the age 18-55 years have good dehydration status minimum dehydration and significant dehydration. Technical workers caused this did many physical activities and in the hot temperature work climate. As a result, the workers produced sweat from their bodies, leading to dehydration (losing body fluid). As many as 84.4% of respondents were at the minimum dehydration status. However, 15.6% of the respondents were at a significant dehydration status. It was said as significant dehydration based on the result of specific gravity of urine (BJU) measurement. The result was 1.021-1.030 g/dl. Meanwhile, as minimum dehydration, the result of specific gravity of urine measurement (BJU) is 1.010-1.020 g/dl. The shipping companies at the maintenance and repair division was not found the workers with good dehydration status (BJU<1.1010 g/dl) and weight (BJU>1030 g/dl). Research conducted by (Dieny and Putriana, 2015) on football athletes who had physical activities was obtained that 89.4% as the specific gravity of urine (BJU) 1.016-1.020 g/dl experienced significant dehydration because athletes only drink when they felt thirsty and because athletes were also doing physical activity.

According to the result of the research, there were three categories. They were insufficient, sufficient, and more based on the reference (PERDOKI, 2014) and (Suma'mur, 2009) the standard was ≥ 2.8 liters per day, which workers must consume. Most workers were in the moderate category, approaching 48.98%.

The secretion of body fluids needs to be balanced with the body fluids entry. Drinking water habits among the workers need to be considered to complete the body's needs. While working, the workers needed more mineral water consumption than they did not. If the daily mineral water consumption was 8 glasses, the workers should be more than 8 glasses, around 2 Littre a day. (NIOSH, 2011) also suggested that the workers drink a glass (about 150 cc) for 15-20 minutes even did not feel thirsty for the workers at the hot temperatures. Therefore, drinking adequate mineral water will fulfill the body's needs while working.

Work climate perception was disturbed and undisturbed in the hot temperature work climate at shipping companies' maintenance and repair divisions. The perception was subjective which hot feeling in the work climate is based on six factors: a heat source, air temperature, moving air velocity, relative humidity, clothing used, and the physical workload expended by the worker (Kuswana, 2014). (Suma'mur, 2009) also explain that hot pressure can be caused by the combination of work climate (humidity,

hot radiance, air temperature, and moving air velocity) with the body's metabolic heat. Each person's perception was subjective, which means it is different from one to another. It was also the same with the perception of disturbed and undisturbed work climate. This case can be caused by acclimatization among the workers at the maintenance and repair division.

Workers Age Differentiation with Dehydration Status

Based on the research done on the technical workers at the maintenance and repair in shipping companies, all the workers are men aged 18-55 years and had good minimum dehydration and significant dehydration. However, based on statistical tests using two-way ANOVA did not show a differentiation of status dehydration with workers' age. In line with (Puspita and Widajati, 2017), age was not the only factor that can lead to dehydration among workers because dehydration can attack anyone from children to the elderly.

Concerning the research by (Wright et al., 2014) on the health and science research ethics board at the University of Ottawa obtained, there was no difference in the young (Y, mean ± SE; 25.8 ± 0.8 years), middle-aged (MA, 43.6 ± 0.9 years) group, and old (O, 57.2 ± 1.5 years) in the incidence of dehydration. It measured the specific gravity of urine (BJU), both before and after intermittent exercise treatment, which was carried out constantly at a moderate heat production rate (400 W). The participants were well hydrated before the exercise trial. Their dehydration was measured after doing the activity and showed no difference between age and dehydration. Another study also revealed that age was not related to the level of dehydration experienced by manic workers in Jombang workers and showed a very weak negative relationship (Nilamsari, Damayanti, and Nawawinetu, 2018).

The Relationship between Drinking Water Habit with Dehydration Status

Based on the research result and statistics test using, a Spearman correlation test revealed that there was a significant correlation. This finding is in line with the previous research conducted by (Sari and Nindya, 2017) on the mechanics at PT PAL Indonesia general engineering division. It found that there is a relation. The workers have good dehydration status if they consume adequate mineral water, while they get dehydration if they lack mineral water consumption. According to them, drinking water that contains salt can prevent dehydration because it can fulfill body fluids.

Previous research done by (Ariantika and Mardiyati, 2017) among badminton athletes shows a positive correlation between drinking habits and dehydration status. There was a significant correlation where the less drinking habit has 70% low hydration status. Also, athletes carry out sweaty physical activities, such as technician workers in the maintenance and repair division of shipping companies, so they need a balanced consumption to balance fluids in the body. Another research by (Fitriah et al., 2018) among salt farmers in Kalioari, Rembang regency there was 51% of farmers got dehydration at the lack of fluids because body fluids can not be fulfilled. The other factor was the lack of easy access to get mineral water so that the amount of mineral water and its habit can not be achieved.

Furthermore, research by (Puspita and Widajati, 2017) shows six workers with severe dehydration status who drink water only when they feel thirsty. When the workers' drinking habits are low, the thirst mechanism cannot be used as a measurement for workers to drink following the amount of fluid that comes out through sweat; as a result, it will not be fulfilling the fluids in the worker's body. Dehydration due to lack of drinking water consumption can impact workers' health problems if there is no proper treatment.

The workers can disrupt their mental and physical performance because of the significant dehydration impact, which can potentially cause health risks for workers, especially when they are at work and when they finish working (Zulkarnain et al., 2020). According to (Andayani and Dieny, 2013), cognition abilities decreased, focus ability and memory decreased, the effect on mood and morale can be caused by dehydration among workers. Besides, their productivity will decrease if they get dizzy, weary, and exhausted. It is the depiction of low physic capacity.

Based on research by (Huda et al., 2018), heat cramps on tofu workers factory, the symptom is a pain in the arms or shoulders. It is a symptom of heat cramps caused by excessive sweating so that the salt content in the body does not match. It can also occur if workers consume water without sufficient electrolytes.

Research conducted by (Imas, Setyaningsih, and Suroto, 2018) shows that water consumption among workers in IV airport construction projects workers can relate to heat strain disorders. If the workers have insufficient drinking water and its intake, it can be risky on the emergence of subjective complaints caused by heat stress.

Research also found that a worker has sufficient drinking water with significant dehydration status. Furthermore, the workers who have insufficient drinking mineral water with minimum dehydration status can be caused by other factors such as a hot work climate. It shows related results to avoid dehydration among technician workers at the maintenance and repair division of shipping companies are maintaining drinking water habits and adding some electrolytes.

The Relationship between Work Climate Perceptions with Dehydration Status

Technician workers at the maintenance and repair of shipping companies run outdoor, related to hot temperature from the environment. The research and statistical tests using the Spearman correlation test show a low negative relationship between work climate perceptions and dehydration status. It means the more feel disturbed, the less dehydration status among workers of shipping companies. Furthermore, drinking water habits that correlate to dehydration among workers did not correlate with work climate perception experienced by the workers, even the workers with the disturbing perception of work climate. Some workers have poor drinking water habits, leading to dehydration on workers. According to (Puspita and Widajati, 2017), when the workers did the activities at hot temperatures, they had to drink frequently (200 up to 300 c a day per one minute) to fulfill the workers' fluids.

Perception is the result of the outdoor work condition that is evidenced by the hot temperature that appropriates with the work climate measurement. The measurement result on work climate at the maintenance and repair of shipping companies was obtained WGBT temperature that the measuring was done in some work areas, based on the job is the medium workload for 8 hours or around 75%-100% working hours. Based on Ministerial Regulation No.5 of 2018 concerning Occupational Safety and Health at Work Environment, Work Environment is obtained a work climate threshold value (TLV) WGBT that is allowed is 28˚C. While the result of WGBT work climate measurement from 7 points of measurement location shows 28.7˚C; 29˚C; 29.6˚C; and 29.7˚C. If it is compared with the threshold value obtained more than 28˚C, it exceeds the limit allowed, and the hot work climate can affect the worker. One of them is the thirst which causes dehydration.

Research conducted in Australia by (Xiang et al., 2015), most of the workers were worried and disturbed by the hot work climate that can increase the danger in the workplace. Research held in Afrika by (Mathee, Oba, and Rose, 2010) shows that the workers feeling disturbed by the hot work climate will impact their health. In the

hot working temperature, the workers feel uncomfortable. That leads to thirst, dehydration, itchy skin, exhaustion, malaise, profuse sweating, dry nose, and even sinusitis, burning and watery eyes, headaches, back and legs, nosebleeds, baldness, itchy and sluggish skin, and dizziness. Consequently, the health effect can influence workers' productivity. This result is in line with research on Australian workers who did their activities during summer. The workers said that the hot exposure could impact their health and their work become inefficient (Singh, Hanna, and Kjellstrom, 2013).

The perception of every human being is subjective, so the results show that even though they are not disturbed by the work climate, there are workers who show significant dehydration results. In the research results on the perception of hot work climate, more workers perceive that they are not disturbed (as much as 73.47%). Even the measurement results show more than the TLV, which means the workers have acclimatized to the work climate. Acclimatization is a condition where workers adapt or make adjustments. Physiologically with exposure to hot environments (NIOSH, 2018), acclimatization is a process for the first time they work or when they first return to work. The workers will have heat tolerance and having the ability to survive in hot environmental conditions (Jacklitsch et al., 2016). According to (Kuswana, 2014), acclimatization is important for workers to work more safely and efficiently.

Even there have had acclimatization on workers in the hot work climate if there was no control. Hence, it can impact workers' health, such as heat rash, heatstroke, heat edema, heat cramps, multigrain dysfunction syndrome continuum, heat exhaustion, and heat syncope (Kuswana, 2014). Similar to research done by (Arianto and Prasetyowati, 2019) on workers of the tofu industry in Dukuh Janten, Bantul found that there was complaint illness because of hot temperature (heat cramps, heat exhaustion, and dehydration) in the hot workplace. Research by (Ningsih, 2019) on fish-smoking workers showed a relationship between physical conditions of the work environment involved hot temperatures when the workers were working. They were humidity with dehydration level, which the contingency coefficient temperature with dehydration level was 0.603 that indicated strong relationship and the p-value was $0.003 < 0.05$. Research is done by (Sari, 2017) there is a correlation between hot climate with dehydration at weaving division workers in PT. Candi Mekar Pemalang with p-value $0.00<0.05$. Moreover, it is also stated that when the ambient temperature increases, the worker's body temperature also increases and causes evaporation through sweat. Sweating more will lead to dehydration if not followed by adequate fluid consumption.

In a study conducted by (Zulkarnain et al., 2020), sand shovel workers at the Pasir Mutiara Depot, Boom Baru Palembang, were exposed to a hot environment experienced mild fatigue. It would increase if they were exposed to a hot environment. While the research conducted by (Boonruksa et al., 2020) in Thailand showed that informal workers who harvest sugarcane in outdoor environments found significant dehydration and psychological symptoms. For example, headache, fever, nausea, dizziness, swollen hands/feet, and respiratory symptoms such as coughing, eye, and skin irritation.

In addition, working in a hot environment can cause the impact of dehydration and disease disorders in human organs. According to research conducted by (Bardosono and Ilyas, 2014) on Indonesian workers in two factories located in Cibitung, West Java, in a hot working environment shows the results of risk, acute and chronic risk status occurs on workers who work in hot work environments. In addition to the risk of acute and chronic dehydration, according to (Bardosono and Ilyas, 2014), working in a hot environment

can also cause organ damage such as kidney damage and blood vessel buildup. However, it does not rule out that both workers in hot and cold environments will be susceptible to dehydration and metabolism, so it is necessary to pay attention to physical work activities and the provision and consumption of water in the workers' environment.

Based on previous research, work climate perception shows a relationship to dehydration in workers. It is necessary to know the work climate to not exceed a predetermined limit or threshold value (TLV). The impact of work-related diseases from a hot work climate can be prevented from company loss both materially and non-material.

CONCLUSIONS

The research had found that 85.71% of respondents in shipping companies had minimum dehydration status and significant dehydration for the rest. Meanwhile, in the drinking water habit among workers, it was found that there were less, enough, and more categories. There were 34.7% of respondents in the less category. The work climate measurement locations were obtained >28 C, exceeding the allowed limit. However, only 26.53% of respondents had disturbed perceptions, and the rest had undisturbed perceptions. Analysis of the age differences and dehydration status did not show any differences. Meanwhile, drinking water habits and work climate perceptions were related to dehydration status in shipping company workers.

Some suggestions that the researchers can give to the workers are improving drinking water habits while working to avoid dehydration that will impact their health. Moreover, according to the measurement, the working climate conditions exceed TLV. The shipping company should pay attention to drinking water consumption for workers, add some electrolytes to the workers' drinking, and educate about dehydration, such as the causes, characteristics, impacts, and ways to prevent dehydration. It is also needed to control the hot work climate, the regulation of rest time, and physical activity among workers.

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