JMH
Jurnal Medika Hutama
Vol 03 No 01, Oktober 2021
http://jurnalmedikahutama.com

e-ISSN. 2715-9728
p-ISSN. 2715-8039

Open Access

SAFETY CLIMATE PERCEPTION AND COVID-19 ASPECTS COMPLIANCE AMONG INDONESIAN WORKERS: A CASE STUDY IN OIL AND GAS COMPANY

Atta Rizky Suharto[1], Fatma Lestari[1]

[1] Occupational Health & Safety Department, Faculty of Public Health, Universitas Indonesia

Corresponding Author: Atta Rizky Suharto, Occupational Health & Safety Department, Faculty of Public Health, Universitas Indonesia.
E-Mail: attarizkysuharto@gmail.com

Received July 23, 2021; **Accepted** July 28, 2021; **Online Published** October 04, 2021

Abstract

Safety climate is vital element put on safety in a workplace organization. Attitudes, values, opinions and actions of workers in company may contribute to the perceptions and beliefs, and it will be possibly to change in the period of time and circumstance. The pandemic of COVID-19 has disrupted many aspects of life, including work safety climate in organization. Workers should be complied with tight rules and to raise their awareness of health risk and COVID-19 protocols. The study aims to overview the relationship between safety climate and COVID-19 aspects, as evidence that new adaptive behaviors can be implemented in the workplace. The study included 30 participants of oil and gas workers through online survey to assess demographic characteristics, health risks, outdoor activities, COVID-19 protocols and safety climate dimensions. Data set was performed with SPSS 24.0 to analyze safety climate items based on health risks, the possibility of outdoor exposures and the compliance of COVID-19 health protocols through independent-samples T test. The research study resulted those personal priorities and need for safety (p= 0.005) has different means among worker group with high and low health risk. Meanwhile communication perceived (p= 0.007) towards COVID-19 health protocols compliance has significant mean gap. In conclusion, the study will be utilized as pioneered evidence to make a further research about safety climate and COVID-19 aspects, which will be impactful to identify the perception in safety of organization.

Keywords: *Safety Climate, COVID-19 Protocol, Health Risk, Outdoor Activities*

INTRODUCTION

Safety climate is part of component of organizational culture, focuses on organization values and presumption about human resources and safety[1]. In decades, safety measures have been developed to identify fatalities, lost time, and injuries into leading indicators like safety climate surveys[2]. Safety climate assessment consists of measurable elements such as work behaviors, worker perception of safety, and safety system[3]. Safety climate questionnaire is used for measuring workers' perceptions of management commitment to safety, priority of safety, communication, safety rules, and other personal priorities including working environment[4]. Safety climate focus is linear and reflects the underlying culture of an organization and a work group[5]. It is important to measure safety climate in organization to collect information about climate level and its strength[6]. Company who complies with strong safety climate have low accident rate because of effective safety climate implementation and robust management commitment to safety[7]. A study done in a chemical industry in South Africa indicates management commitment playing

important role to safety[8]. Many previous studies confirm the relationship between safety climate and leadership, which also includes communication as a process of learning that finds and shares information with their teams, is used to identify environments characteristics[9].

People have been dealing with the COVID-19 pandemic since the beginning of 2020. This situation is affecting all countries globally, modifying not only healthy lifestyles but also activities in workplace in all sectors, due to the tight safety measures aimed at reducing the spread of the virus[10,11]. Indonesia is one of the most affected countries, which is based on data provided by Ministry of Health that nearly 3 million confirmed cases and around 77.000 deaths were registered per mid-July 2021. Despite affecting to daily life that concern all of us, working activities and the organization of workplaces have been modified in order to deal with the pandemic[12]. In fact, the new adaptive rules have been introduced prevention measures to minimize the possibility of being contaminated at the workplace like safe physical distances between workers, routine disinfecting and sanitizing the workplace and working tools, and personal hygiene behaviors. On the other hand, government has implemented integrated isolations, boost in vaccination program and restrictions in travelling and mobilization have affected the workforce as well[13].

Due to many injuries reported, safety issue in the oil and gas industry has drawn more attention. Limited studies have been conducted to identify best practice. Indeed, more research needs in order to enrich the result of safety in the oil and gas industry, in particular regarding COVID-19 pandemic situation. In Indonesia, research about safety in oil and gas company has been conducted in recent years, but is very limited and has a vary findings. It encourages to identify further relationship between safety climate perception and the compliance of COVID-19 aspects consisted of their health risk, outdoor activities and health protocols that activities happened in workplace.

RESEARCH METHOD

A questionnaire through online survey was performed to identify the dimension of safety climate and COVID-19 aspects in the oil and gas company in Indonesia. The questionnaire has three parts. The first part collected data about demographics or sample characteristics, including gender, education, and number of working experiences, health risk, outdoor activities, and COVID-19 health protocols. The second section consisted of 75 questions drawn from previous safety climate studies to represent 9 dimensions of safety climate which used a six-numbered scale is preferred for each dimension. The third part was COVID-19 aspects that consisted 3 items, including health risk, outdoor activities and COVID-19 health protocols. Health risk was measured by asking about blood sugar, blood pressure, smoking, fatigue and COVID-19 symptoms. Meanwhile outdoor activities included >1-hour outdoor exposure, gathering more than 5 people, the length of meeting in out of home, crowded exposure, public transportation use and inter-city travel. The COVID-19 health protocols were collected through asking personal hygiene (handwashing, mask use, hand sanitizer use), physical distancing, physical activities and sun exposure. 30 participants were included in the study to identify the relationship between two aspects, safety climate perception and COVID-19 aspects. The statistical analysis was performed with SPSS 24.0 to assess safety climate dimensions according the group of health risk, outdoor activities and health protocols, besides demographic items.

RESULTS AND DISCUSSION

In a total, there was 30 research participants in the survey which administered online and they have been working for at least 1 year in the oil and gas company. Samples are dominated by male workers who is about 73% compared to female employee due to imbalance gender diversity in population representing all workers in the company. Most participants have completed education from the college or university (diploma and bachelor). The big gap is related to position of management level, which is only 10% in top level. In general participants have been at risk to COVID-19 exposure due to high health risk condition or comorbid, outdoor exposure and minimum compliance of health protocols.

Table 1. Demographics and COVID-19 aspects of Respondents

Profile	Classification	N	%
Gender	Male	22	73.03
	Female	8	26.07
Education	Senior High School	13	43.03
	University/College	17	56.07
Position	Lower management	27	90.00
	Upper management	3	10.00
Working Experiences	< 14 years	17	56.07
	>= 14 years	13	43.03
Health Risk	High	25	83.03
	Low	5	16.07
Outdoor Activities	High	10	33.03
	Low	20	66.07
COVID-19 Health Protocols	High	12	40.00
	Low	18	60.00

Result achieved by means of the questionnaire show a general high perception of safety climate and in relation to COVID-19 aspects, except work environment has the lowest perception among others. In more detail, in table 2 the result of independent sample t-test indicate that personal priorities and need for safety perception has difference mean among two groups based on their health risk condition. It represents employee with low health risk having higher perception in compared to another group regarding the safety necessary and their personal choices. While workers according to their outdoor activities have no significant mean gap about safety climate perception within the group. Communication perceived has different mean score among workers with high and low compliance in COVID-19 health protocols.

Table 2. T-test for Safety Climate Dimension and COVID-19 Aspects

	Health Risk			Outdoor Activities			Health Protocols		
Safety Climate Item	**High (N=25)** ***mean***	**Low (N=5)** ***mean***	***p-value***	**High (N=10)** ***mean***	**Low (N=20)** ***mean***	***p-value***	**High (N=12)** ***mean***	**Low (N=18)** ***mean***	***p-value***
Management Commitment	4.542	4.657	0.637	4.371	4.657	0.128	4.452	4.634	0.318
Priority of Safety	3.120	3.660	0.485	3.166	3.216	0.865	3.138	3.240	0.718
Communication	4.943	5.933	0.803	4.925	4.970	0.843	4.618	5.180	**0.007**
OHS Rules	3.866	5.046	0.349	3.958	3.891	0.782	3.770	4.009	0.272
Supportive Environment	3.911	4.200	0.322	3.966	3.955	0.962	3.806	4.016	0.247
Involvement	3.660	4.200	0.099	3.650	3.800	0.570	3.583	3.583	0.271
Personal Priorities and Need for Safety	5.537	5.857	**0.005**	5.414	5.678	0.073	5.519	5.511	0.367
Personal Appreciation of Risk	5.160	5.000	0.711	5.450	4.975	0.157	5.167	5.111	0.866
Work Environment	2.742	2.928	0.867	3.100	2.585	0.198	2.595	2.865	0.487

The analyses carried out represent in reducing the lack of research on safety climate among oil and gas company. The study focused on the impact due to COVID-19 outbreak had on the perception of workers' safety issues. In this circumstance, the questionnaire was utilized because it represents a reliable tool to investigate the perceptions of management and workers commitment to safety, highlighting safety priority, perceived communication, OHS rules, employee involvement, personal priorities and safety needs, individual risk appreciation and also work and supportive environment. In particular, to confirm the research hypothesis, the results were compared with a previous study which has similar context about safety climate perception and COVID-19 aspects. This allowed us to obtain differences in safety climate perceptions that can be due to the different working situations caused by the COVID-19 pandemic. Such an output underpins the hypothesis, based on which a positive impact of the COVID-19 safety measures on safety perceptions of workers can be assumed.[14]

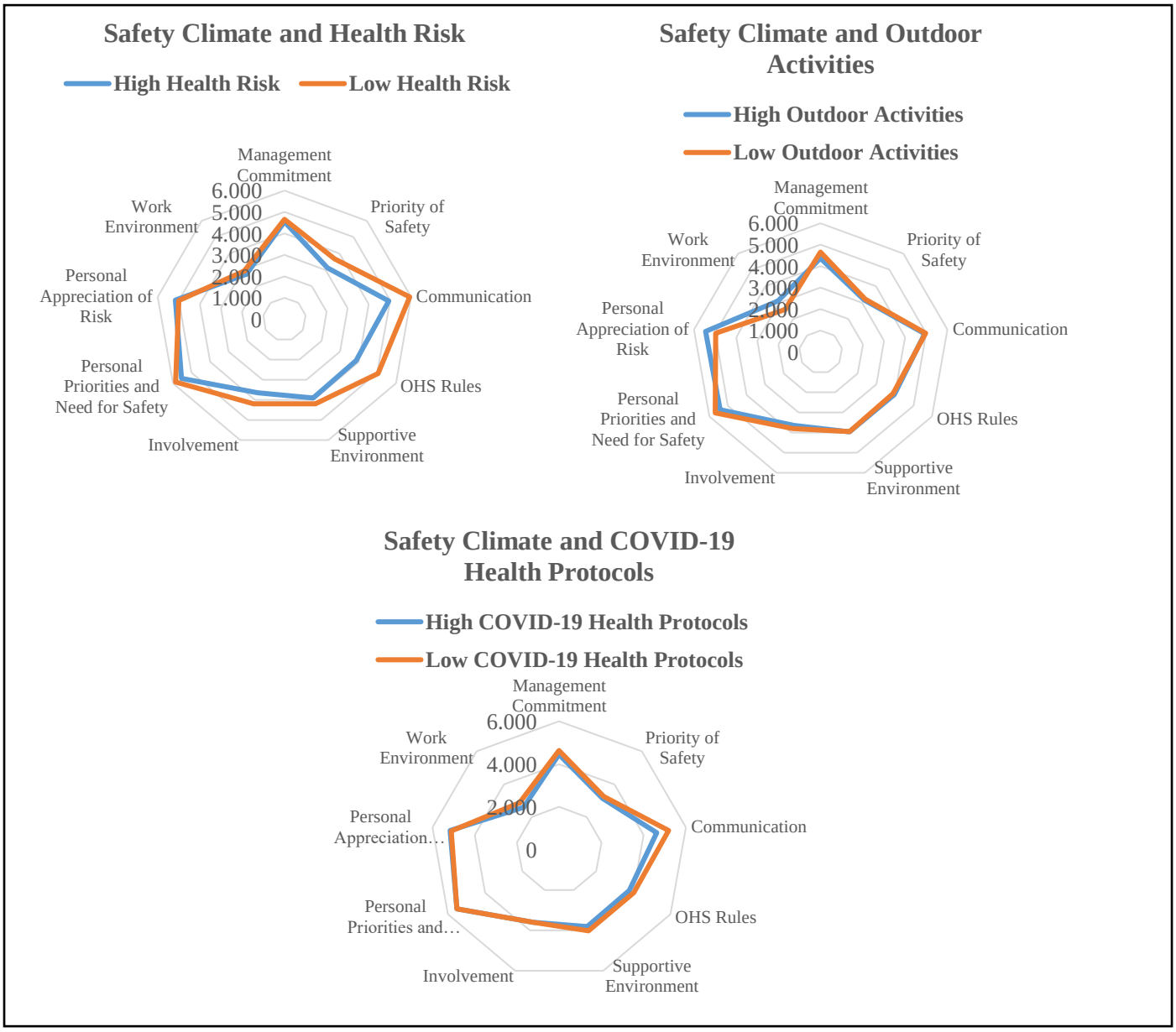

Figure 1. Overall Result of Safety Climate Dimension and COVID-19 Aspects

In terms of health risk condition, employees have huge mean gap perception between low and high-risk group. The ones with healthier condition are more likely to think that safety and health rules are practical and already followed by all workers. While communication perceived has the highest score among others in the minimized health risk group. It means the respondents has received regular update and information about safety issues and COVID-19, similar result with a study about safety climate perception in two construction projects of Indonesia and Australia.[15]

In the context of outdoor activities, there is no difference mean score between two groups. Workers who are enforced to do more activities out of home has possibility to get infected by the virus. So that, they have perception on individual risk appreciation has the highest score among other, because they follow the instruction by the government and already aware with the exposure. During the restriction period, the act of staying at home can effectively flatten the curve as the number of cases reducing until 25%.[16] Besides, another policy minimizes public transportation use to reduce the

transmission and encourages people to use private car and motorcycle.[17]

Government has strongly advised people to comply with health protocols during the COVID-19 pandemic and a tight self-protection. The use of personal protection equipment or PPE is classified as one of hierarchy control that can be applied to stop the spread of virus. From the result above show the highest perception in both groups based on their health protocols are personal priorities and safety needs and individual risk appreciation. This finding is in line with previous study in Indonesia about personal hygiene behavior that use of mask, sanitized hand and physical distancing is one of prevention and control towards the COVID-19 infection.[18]

These results can certainly enhance learning regarding the impact of COVID-19 pandemic situation on workers in oil and gas company responding to the need of further research to analyze the effects of the COVID-19 pandemic in different sectors. There is no qualitative nature of results as representation of the limitation in this study, whose validity has to be related to the case study context only. The sample population was also limited due to short time to collect data and it depends on online platform which is no mandatory for employees participating in the survey.

In addition, the COVID-19 questionnaires and safety climate dimension presented in this research has to be considered as a tool for general surveys that helped us in better understanding the specific context in which the safety climate investigation was performed in the pandemic of COVID-19 situation. Thus, researchers and practitioners are welcome to participate in its implementation and further studies, also in different workplace settings.

CONCLUSION

Overall, the results of the current study can enhance knowledge and awareness on safety perception and its compliance in the context of COVID-19 aspects in particular oil and gas sector. In this light, COVID-19 prevention and control can achieve high perception on safety climate as it can contribute to understand how workers feel about safe and stay healthy in the workplace, although they might be at risk of virus exposure. However, it needs further study to identify the relationship of COVID-19 aspects and safety climate in larger samples and providing additional qualitative information through in-depth interview and focus group discussion to confirm the result.

REFERENCES

1. Milijic N, Mihajlovic I, Strbac N, Zivkovic Z. Developing a questionnaire for measuring safety climate in the workplace in Serbia. *Int J Occup Saf Ergon.* 2013; 19(4) : 631 -45
2. Mearns K, Whitaker SM, Flin R. Safety climate, safety management practice and safety performance in offshore environments. *Safety Sci.* 2003; 41(8) : 641 -80
3. Colla JB, Bracken AC, Kinney LM, Weeks WB. Measuring patient safety climate: a review of surveys. *Qual Saf Health Care.* 2005; 14(5) : 364 -6
4. Glendon AI, Litherland DK. Safety climate factors, group differences and safety behaviour in road construction. *Safety Sci.* 2001; 39(3) : 157 -88
5. Khandan M, Maghsoudipour M, Vosoughi S, Kavousi A. Safety climate and prediction of ergonomic behavior. *Int J Occup Saf Ergon.* 2013; 19(4) : 523 -30

6. Bondevik GT, Hofoss D, Hansen EH, Deilkas EC. Patient safety culture in Norwegian primary care: a study in out-of-hours casualty clinics and GP practices. *Scand J Prim Health Care.* 2014; 32(3) : 132 -8
7. Gershon RR, Karkashian CD, Grosch JW, Murphy LR, Escamilla-Cejudo A, Flanagan PA, et al. Hospital safety climate and its relationship with safe work practices and workplace exposure incidents. *Am J Infect Control.* 2000; 28(3) : 211 -21
8. Bosak J, Coetsee WJ, Cullinane SJ. Safety climate dimensions as predictors for risk behavior.*Accid Anal Prev.* 2013; 55 : 256 -64
9. Zohar D. Thirty years of safety climate research: reflections and future directions. *Accid Anal Prev.* 2010; 42(5) : 1517 -22
10. Nicola, M.; Alsafi, Z.; Sohrabi, C.; Kerwan, A.; Al-Jabir, A.; Iosifidis, C.; Agha, M.; Agha, R. The socio-economic implications of the coronavirus pandemic (COVID-19): A review. Int. J. Surg. 2020, 78, 185–193. [CrossRef] [PubMed]
11. Pulighe, G.; Lupia, F. Food first: COVID-19 outbreak and cities lockdown a booster for a wider vision on urban agriculture. Sustainability 2020, 12, 5012. [CrossRef]
12. Kementerian Kesehatan Republik Indonesia. Available online: https://covid19.go.id (accessed on 21 July 2021).
13. Li, H.Y.; Cao, H.; Leung, D.Y.P.; Mak, Y.W. The Psychological Impacts of a COVID-19 Outbreak on College Students in China: A Longitudinal Study. Int. J. Environ. Res. Public Health 2020, 17, 3933.
14. Fargnoli, M.; Lombardi, M. Safety Climate and the Impact of the COVID-19 Pandemic: An Investigation on Safety Perceptions among Farmers in Italy. Safety 2021, 7, 52. https://doi.org/10.3390/safety7030052
15. Martin Loosemore, Riza Yosia Sunindijo, Fatma Lestari, Yuni Kusminanti, Baiduri Widanarko, (2019) "Comparing the safety climate of the Indonesian and Australian construction industries: Cultural and nstitutional relativity in safety research", Engineering, Construction and Architectural Management, https://doi.org/10.1108/ECAM-08-2018-0340
16. Rashid ; Ridda I; King C; Begun M; Tekin H; Wood JG; Booy R. Evidence compendium and advice on social distancing and other related measures for response to an influenza pandemic, Paediatric Respiratory Reviews. 2015; vol. 16, pp. 119 - 126, 10.1016/j.prrv.2014.01.003
17. Cabinet Secretary of The Republic of Indonesia. Gov't Issues Regulations on Transportation Control to Prevent COVID-19 Spread. 2020. Available from https://setkab.go.id/en/govt-issues-regulation-on-transportationcontrol-to-prevent-covid-19-spread
18. Lestari, Fatma & Kadir, Abdul & Idham, Muhammad & Azwar, Fahrul & Ramadhany, Ganis & Sembiring, Fredy & Ghazmahadi, Ghazmahadi & Hakim, Abdul & Modjo, Robiana & Widanarko, Baiduri & Kusminanti, Yuni. (2020). A cross sectional survey of personal hygiene positive behaviour related to COVID-19 prevention and control among Indonesian communities. 10.21203/rs.3.rs-132920/v1.