

Covid-19 Prevention Protocol Implementation in Construction Projects

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Abstract

Construction work projects that are currently underway during the pandemic must implement a protocol to prevent the spread of COVID-19. The purpose of this study was to analyze the implementation of the prevention protocol in several construction work projects in Sumatera Utara. The data research was collected from the Indrapura–Kisaran highway, the Kuala Tanjung–Tebing Tinggi–Parapat highway, and the RIS Maduma–Dairi University Flats using questionnaire and interviews method. This study result is the contractor provides health facilities in an effort to prevent the spread of COVID-19 as follows clinic room compliance only 50%; additional facilities (blood pressure meter, drugs, and medical officer) also worker immunity (hand washing facilities, tissue, and face mask) has been fulfilled 100%; while cooperation facilities reaches 73%. The nutritional content needs of the workers are met to maintain their immunity. The contractors, consultants, and project owners of the three construction projects have implemented the prevention protocol in accordance with the minister's instructions.

Keywords: *site project, virus, facilities, consumption, workers.*

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Introduction

Coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) initially occurred in Wuhan, China (Acter et al., 2020; Felice et al., 2020; Ghinai et al., 2020; Lai et al., 2020). by the second week of may 2020, about 3.759.967 positive cases of COVID-19 and 259.474 deaths due to COVID-19 were recorded globally (WHO, 2020). More than 212 countries and territories have confirmed cases of COVID-19 infection. On January 30th, 2020, the WHO declared COVID-19 a public health emergency of international concern. In

Indonesia, the first case was detected in early March 2020. the spread was uncontrolled. Thus, the number of positive cases reached 13.645 in the beginning of May 2020 (Kompas, 2020). The spread of the virus so quickly in almost all sectors, including the construction sector. This sector has become a new cluster for the spread of COVID-19, which is thought to be due to fatigue and lack of nutrition (Silverman, Heim, Nater, Marques, & Sternberg, 2010). Other factors, for example, for not complying with health protocols such as wearing masks and crowding in close quarters (Ferdous et al., 2020; Sharma, Mishra, & Mudgal, 2020; Sebong, Tjitradinata, & Goldman, 2021).

To prevent the spread of COVID-19 in the construction field, the Indonesian Government had issued the regulation No. 02/IN/M/2020, which was organized by The Ministry of Public Works and Public Housing (Hansen, Rostiyanti, Rizaldi, & Andjarwati, 2021). The protocol intends to prevent it in construction service sectors and has several requirements, including the formation of a task force, identification of the potential dangers of COVID-19 in the field, establishment of health measures in the field, and implementation of protocols to prevent the spread of COVID-19 in the field. These are part of the duties and responsibilities of the occupational safety and health requirements in the construction sector. construction workers perform various types of activities, each of which has a high risk in terms of occupational safety and health with the added threat of COVID-19 (Pinto, Nunes, & Ribeiro, 2011).

Furthermore, the construction management established by contractors or developers contributes to the creation of a comfortable and safe environment for construction workers in the construction field (Hola & Szostak, 2014). The implementation of occupational safety and health must be conducted according to the policies established by the government, the occupational health and safety management in each company, and the behavior of each worker or employee (Nyirendaavwil, Chinniah, & Agard 2015). Occupational safety and health is crucial as it does not only concern the safety and health of construction workers but also those of their colleagues and families as well as the people who will live in the constructed structure. Some of the accidents that occur at construction work are caused by the lack of attention or commitment from the contractor to implement the occupational safety and health program properly (Kani, Mandagi, Rantung, &

Malingkas, 2013). Therefore, a “construction safety culture” should be upheld as a group of knowledge, habits, and behaviors that encourage companies to adopt safety and health approaches as well as procedures in the construction industry (Geller, 1994). It is related to the management of the organizations, members, structures, and processes that lead to a culture of implementing occupational health and safety (Meliá, Mearns, Silva, & Lima, 2008).

Furthermore, states that the high number of accidents in the construction sector is not caused by a low level of awareness of occupational safety and health but by the lack of implementation of occupational safety and health programs and systems by the contractors (Lamontagne et al., 2004). Especially, during the COVID-19 pandemic, the health condition of workers in terms of food intake greatly reflects their work productivity and performance. The results of a study conducted on African workers showed that there is a relationship between food intake and productivity. It is necessary to conduct a study on the extent to which construction actors (contractors or developers) play a role in protecting construction workers, consumers, or users of the construction products from the dangers of COVID-19 transmission. Thus, a study is needed that ascertains the extent to which efforts to prevent the spread of COVID-19 in construction projects are compared with the government regulation in Indonesia. This study to investigate the COVID-19 prevention protocol implementation in construction projects in Sumatera Utara.

Method

The research was conducted in several construction projects in Sumatera Utara from June to November 2020. The population of this research study is a construction work project that is currently underway in the province of Sumatera Utara, Indonesia, which consists of toll road construction, railways, irrigation projects, and building construction projects. The research sample consisted of 3 construction work projects, namely: (1) The Indrapura-Kisaran highway construction project, (2) The Kuala Tanjung-Tebing Tinggi-Parapat highway and (3) the construction of The RIS Maduma - Dairi University Flats. Sampling technique to conduct the data using cluster random sampling technique. Random sampling in this research study is a

sampling technique in which all individuals in the population are given the same opportunity. This study used a descriptive research model with the aim of identifying ongoing problems, finding factual information, making comparisons or evaluations, and finding out what is being done to deal with a pandemic in several construction work projects. The research stages are presented in Figure 1. Data collection techniques in the study were performed through online questionnaire, interview, observation of construction work project site, and consumption patterns or intake of construction workers, using the 2x24 hours recall method. The indicator of the prevention scheme in the construction sector for each element is given a score of “+1” if “yes” and “0” if “no.” This value generates the frequency (number) and percentage that indicate the successful implementation of the COVID-19 prevention protocol in the project.

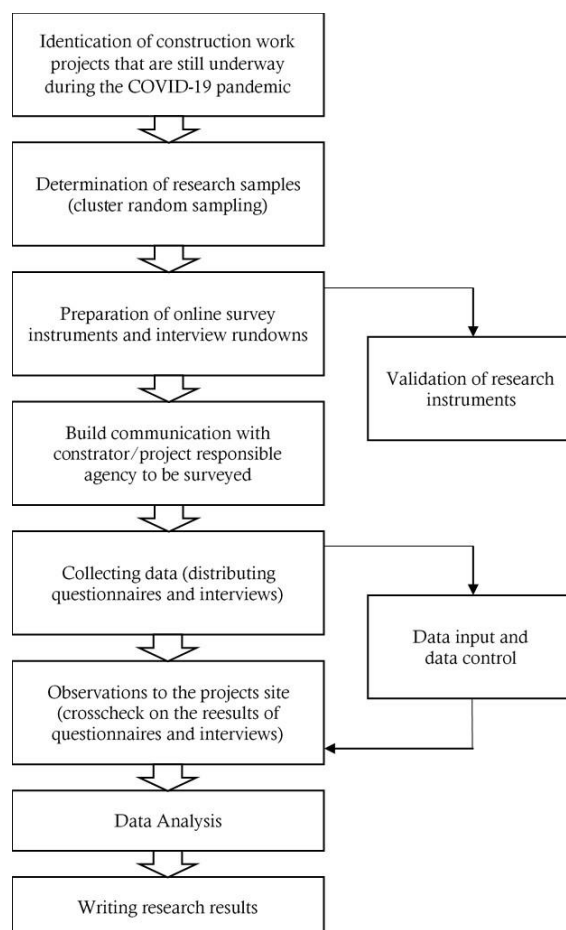


Figure 1. Research Flow Chart

Result

The COVID-19 prevention protocol on construction work projects is one of the efforts to maintain the sustainability of construction work and prevent the spread of COVID-19 (Cirrincione et al., 2020; Iavicoli et al., 2021) in the construction project environment, so that construction work targets can be realized with conditions for workers safe and free from

COVID-19. The research was carried out in several construction project locations in the province of Sumatera Utara from June 2020 to November 2020. Table I presents the form of the implementation of the prevention protocol at sites. While, table II presents availability of COVID-19 prevention health facilities in some projects.

Table I.

Implementation of the COVID-19 Prevention Protocol in Construction Projects

| Name of Project | Contractor | Activity in Project | | | |
|--|-----------------------|---------------------|-------------------|---------------------|------------------------|
| | | Meeting | Worker Inspection | Briefing of Workers | Treat at Work Location |
| Tebing Tinggi-Pematang Siantar Highway | Pembangunan Perumahan | KPD, PoM | WH, CBT, PoM | KPD, PoM | PoM, PPE |
| Indrapura-Kisaran Highway | Wijaya Karya | KPD, PoM | WH, CBT, PoM | KPD, PoM | PoM, PPE |
| RIS Maduma-Dairi University Flats | - | KPD, PoM | WH, CBT, PoM | KPD, PoM | PoM, PPE |

Information: KPD=Keep Physical Distance; POM=Put on a Mask; WH=Washing Hands; CBT=Check Body Temperature; PPE=Personal Protective Equipment.

Based on Table I, activity in all project have implemented the COVID-19 Prevention Protocol such as at meeting, worker inspection, briefing of workers, and treat at work location. The activities have complied with the rules of health protocol, as follows keep physical distance, put on a mask, washing hands, check body temperature, and personal protective equipment. Obedience has reached 100% in an effort to prevent the spread of the virus in site project site.

Table 2
Availability of COVID-19 Prevention Health Facilities in the Project

| The Project Name | Clinic Room | | Additional Facilities | | | Worker Immunity | | | Cooperation | | | | |
|--|-------------|----|-----------------------|---|----|-----------------|----|----|-------------|----|---|---|---|
| | OT | TS | BP | D | MO | HW | TS | FM | V | VT | N | H | C |
| Tebing Tinggi - Pematang Siantar Highway | - | √ | √ | √ | √ | √ | √ | √ | - | √ | √ | √ | √ |
| Indrapura – Kisaran Highway | - | √ | √ | √ | √ | √ | √ | √ | - | √ | √ | √ | √ |
| RIS Maduma-Dairi University Flats | - | √ | √ | √ | √ | √ | √ | √ | - | √ | √ | - | √ |

Information: OT=Oxygen tube; TS=Thermoscan; BP= Blood pressure meter; D= Drugs; MO= Medical Officer; HW= Hand washing facilities (Water; Soap; Handsanitizer); TS= Tissue; FM= Face mask; V= Vaccine; VT=Vitamin; N=Nutrition; H= Hospital; C=Clinic.

While, based on Table 2 known that this study result is the contractor provides health facilities in an effort to prevent the spread of COVID-19, but not all facilities are available perfectly in some projects. The COVID-19 prevention health facilities in the project consist of clinic room, additional facilities, worker immunity, and cooperation. Based on the survey results, it is known that clinic room compliance only 50%; additional facilities (blood pressure meter, drugs, and medical officer) also worker immunity (hand washing facilities, tissue, and face mask) has been fulfilled 100%; while cooperation facilities reaches 73%. Fourth Required COVID-19 prevention measures are provided include the 11 items that are fulfilled among the 13 items recommended in the COVID-19 prevention protocol for the construction sector. There are two items that have not been fulfilled (0%), namely the provision of oxygen cylinders and vaccines.

Discussion

General Description of The Research Location

Construction work projects that were already underway before the COVID-19 pandemic in the Sumatera Utara Province included the Trans Sumatra highway project, The Tebing Tinggi - Parapat highway, and the construction of flats for students at Dairi University. In February 2020,

when the COVID-19 pandemic hit all parts of Indonesia, there were a few obstacles in the implementation of construction work on the three projects (Hishan, Ramakrishnan, Qureshi, Khan, & Al-Kumaim, 2020). The obstacles that occur are due to restrictions on activities and space for movement that are imposed on all types of businesses or activities (Sparrow, Dartanto, & Hartwig, 2020). After the issuance of the PUPR Minister's instructions regarding the COVID-19 prevention protocol in the construction services sector, several projects were able to run again with strict rules regarding health protocols during the COVID-19 pandemic. The following are the locations at which the research was conducted. Tebing Tinggi–Parapat highway is divided into two sections, called section 2 (Tebing Tinggi–Serbelawan, 30 km) and section 4 (Serbelawan–Pematang Siantar, 28 km). The Tebing Tinggi-Serbelawan road section (STA.0.000-STA 30,000) was worked on by PT Waskita with an implementation time of 731 calendar days, while the Serbelawan-Pematang Siantar (STA 30,000-STA 58,000) road was worked on by PT Utama. Works with an execution time of 670 calendar days. The two projects were supervised by the supervisory consultancy from PT Bina Karya with the project implementation time as long. The project owner is PT Utama-Marga-Waskita. Meanwhile, the Indrapura–Kisaran toll road (47.75 km) is part of the Trans Sumatra toll road. The work project consists of two sections. It is section 1 (Indrapura–Fifty, 15.6 km) and section 2 (Fifty–Kisaran, 32.15). The Indrapura-Kisaran toll road (STA. 109 + 100 to STA. 156 + 850) is being worked on by PT. Housing Development with a consultant PT. Virama Karya.

Implementation of COVID-19 Prevention Protocol

The COVID-19 prevention protocol in construction projects is implemented jointly by the work implementer (constructor), job supervisor (consultant), and project owner. The implementation starts with the formation of a task force (*Satgas*) by the project owner. This is followed by the provision of health measures in cooperation with the nearest hospital or health center, which is the responsibility of the contractor. Health protocols are implemented in every activity in the construction project environment, such as meetings, worker health checks, prework briefings, and onsite medical treatment.

COVID-19 Preventive Facilities

In construction projects, COVID-19 prevention measure is important and needs special attention. Construction projects are required to provide several health facilities (Doulabia & Asnaashari, 2016) such as field health clinics equipped with adequate health facilities, including oxygen cylinders, thermoscan, blood pressure gauges, medicines, and staff medical; have operational cooperation for health protection and COVID-19 prevention with the nearest hospital and/or community health center for emergency action (emergency); additional facilities include: hand washing (water, soap and hand sanitizer), tissue, masks in the office and field for all workers and guests; and vaccines, vitamins and additional nutrients to increase the immunity of workers (Table 2). Therefore, the health facilities attention be considered by project managers to make the project success and factors that may endanger be anticipated (Asnaashari, Knight, Hurst, & Farahani, 2009).

Table 2 show about 84.6% of the measures provided by contractors are in accordance with the recommendations mandated in the COVID-19 prevention protocol for the construction sector. This is evidenced by the fact that all construction work implementers have provided a minimum of 11 items out of the 13 mandatory items, and only oxygen cylinders and vaccines has not been fulfilled. The special vaccine for COVID-19 is still in the process of being researched and tested in several countries including Indonesia (LaMontagne et al., 2004), so it cannot be provided yet. Thus, the easiest treatment that can be done to maintain and increase the body's immunity is to consume nutritious food until the vaccine is distributed. Fulfilling the adequacy of nutritional intake from the outside can improve the body to be fit.

The Consumption Pattern of Construction Workers

The nutritional needs of construction workers differ slightly from those of workers outside the construction sector. Construction workers need adequate nutritional intake to be able to carry out their work activities, because otherwise they will cause fatigue disturbances that have an impact on productivity. In this regard, the nutritional needs of construction workers are of concern to the contractor because in addition to adequate nutritional intake, supplement intake

is also needed to maintain immunity. During the COVID-19 pandemic, food supply was managed by the contractor by means of catering. Construction workers are provided with meals three times a day (breakfast, lunch, and afternoon snacks). The menu consists of side dishes, vegetables, fruits, pudding, and green beans juice drink. The menu is served varies, especially for side dishes, vegetables, types of breakfast and afternoon snacks, this is done to meet the nutritional needs of construction workers. The parties involved in the project, who are also members of the COVID-19 task force, also provide dietary supplements, such as vitamins, which are given twice a week to all construction workers, with the aim of maintaining the immunity of construction workers. To maintain performance, workers need for alternative foods for workers such as dairy products, eggs, nuts and fish to improve the performance of construction workers (Okoro, Musonda, & Agumba, 2015).

Conclusion

The prevention protocol in construction work projects is an effort to maintain the sustainability of construction work and prevent the spread of COVID-19 in the construction project environment. This enables the realization of construction work targets under safe conditions, free from COVID-19, for workers. The protocol is implemented jointly by the executor (contractor), work supervisor (consultant), and project owner. The research location which is the object of observation consists of two highway and one flat construction projects provide a clinic room and additional measures that helps worker immunity and cooperation. Fourth required prevention measures are provided include the 11 items that are fulfilled among the 13 items recommended in the COVID-19 prevention protocol for the construction sector. There are two items that have not been fulfilled, namely, the provision of oxygen cylinders and vaccines. This effort is quite good in preventing the spread of the virus at the project sites and complying with government regulations. The special vaccine is still under research and testing in Indonesia. Thus, it cannot be provided yet. The nutritional needs of construction workers slightly differ from those of workers outside the construction sector. Construction workers need sufficient nutrition to be able to perform their work activities; otherwise, they will experience fatigue,

which will have an impact on their productivity. In this regard, the nutritional needs of construction workers during the COVID-19 pandemic should be given attention by the contractors. This is because aside from food (e.g., dairy products, eggs, nuts, and fish, which help improve performance), construction workers also need supplements to maintain their immunity.

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