

# PREVENTION AND CONTROL ACTIONS OF COVID-19 CRISIS AT CONSTRUCTION SITES IN MALAYSIA

**Nur Afifah Aliaa Musa<sup>1\*</sup>, Asmalia Che Ahmad<sup>2</sup>, Asniza Hamimi Abdul  
Tharim<sup>3</sup>, Rozana Mohamed Salleh<sup>4</sup> & Puteri Sidrotul Nabihah Saarani<sup>5</sup>**  
**\*Corresponding author**

*<sup>1,2,3,4,5</sup> Centre of Studies for Quantity Surveying, Department of Built Environment  
Studies & Technology, Universiti Teknologi MARA, Perak Branch,  
Seri Iskandar, 32610, Perak Malaysia*

afifaliya18@gmail.com, asmalia809@uitm.edu.my, asniz286@uitm.edu.my,  
rozanasalleh@uitm.edu.my & puterisidrotul@uitm.edu.my

Received: 16 December 2021

Accepted: 7 March 2022

Published: 30 June 2022

## ABSTRACT

*The Coronavirus disease 2019 (COVID-19) has been the global pandemic crisis and has become fatal disaster recently. Hence, preventive and control actions were announced by the government to be implemented as immediate response to the crisis. Construction site is one of the areas that contribute to high infection COVID-19 rate, which has impacted the construction activities. This study attempts to analyse the preventive and control actions of COVID-19 at construction sites in Malaysia. Using the non-probability sampling approach i.e., purposive sampling, a set of questionnaires was distributed to construction site personnels including professionals and workers. Due to the Movement Control Order (MCO) during COVID-19 crisis, the questionnaires were posted online at construction related groups via social media platforms such as WhatsApp, Telegram, Instagram, and Facebook. 112 questionnaires were received and analyse by descriptive statistic using mean. This study examined four (4) main actions which were action taken by employer, employees, at workplace and for travel considerations. Eventually, 35 actions were analysed as the prevention and control actions for COVID-19 at construction sites in Malaysia. The findings revealed that the overall mean value for all the four actions was more 4.00 but less than 4.50. This demonstrated the good implementation level on COVID-19 prevention and control action at construction sites in*



*Malaysia. These findings confirmed that the previous research findings on the confusion on COVID-19 SOP implementation at construction sites has been overcome by the construction players at sites. This shows that awareness programs on prevention and control actions by the authorities have taken place at construction sites. The cooperation between employer and employees has successfully shifted the paradigm on the actions taken to avoid COVID-19 at workplace and during traveling. This study concludes that construction sites in Malaysia do adhere to the COVID-19 prevention and control actions as per the government rules and guidelines.*

© 2022 MySE, FSPU, UiTM Perak, All rights reserved

**Keywords:** *Construction site, COVID-19, Pandemic crisis, Prevention and control action, Malaysia.*

## INTRODUCTION

Recently, the world is facing a lethal infectious disease due to intense acute coronavirus respiratory syndrome 2 (SARS-CoV-2), which recognizes coronavirus disease 2019 (COVID-19) as pandemic. The emerging pandemic crisis of COVID-19 has infected the world and our communities entirely. The COVID-19 pandemic crisis has led to a remarkable worldwide loss of human life and poses challenges to many sectors. One of the sectors is construction. Construction has become one of the sectors that has been affected by COVID-19 pandemic crisis. According to Araya (2020), construction is the sector which play fundamental role in the society. but it is impossible to perform online compared to other sectors such as education. Some countries have shut down construction sites and other sites. This has caused interruption in supply chains and restrictions on operational.

New COVID-19 prevention and control actions as the standard operating procedure (SOP) has been announced by the government to avoid the spread of COVID-19. Confusion over the SOP enforced by the government has led to slow operations at construction sites. The SOP has been updated frequently depending on the COVID-19 situation, issues and government announcements. Nonetheless, many contractors at construction sites failed to standardize the procedural change with the updated version

of SOP. All risks and performance attributes need to be revised by the construction site management as well as worker's need based on the new normal (Ismail et al., 2020). Construction Industry Development Board (CIDB) reported 21% of the respondents were confused over the SOPs and 5% of the respondents said they did not take any action as they are afraid of being infected with COVID-19 (Aziz & Kartono, 2020). This situation has forced some construction sites to stop operating as they struggle to pick up with the strict COVID-19 guidelines. There should be a paradigm shift in many areas of construction as the SOP requires the contractors to implement many activities differently than they did in the past (Goodman, 2020). Hence, COVID-19 preventive and control actions at construction sites need to be studied to examine the management of construction sites in adjusting to the COVID-19 crisis. Thus, this study attempts to analyse the preventive and control actions of COVID-19 at construction sites in Malaysia in order to avoid the spread of COVID-19 since the pandemic crisis is not over.

## **LITERATURE REVIEW**

### **Covid-19**

The Coronavirus disease 2019 (COVID-19) has been a global pandemic crisis, which becomes a vast fatal disaster recently. According to Sheeren et al. (2020), genomic analysis revealed that this disease is phylogenetically related to severe acute respiratory syndrome-like. The novel virus was initially acknowledged in Wuhan, China, in December 2019. At first, this virus was only assumed to infect animals, however, the situation becomes worse when this major acute respiratory syndrome outbreak has spread to human avidly. The original source of viral transmission to humans remains unclear. COVID-19 transmits by droplets and small airborne particles in contaminated air typically indoors.

The World Health Organization (WHO) declared this disease as pandemic on 11 March 2020. Since then, many variants of this virus such as Delta, Alpha and Beta have emerged at many countries. As of this article was written in September 2021, there are more than 230 million cases with

4.73 million deaths all over the world (World Health Organization, 2021). The data marked that COVID-19 is one of the deadliest pandemics crisis in the history.

## **Covid-19 Pandemic Crisis in Malaysia**

The first case of COVID-19 in Malaysia was among travellers from China on 25 January 2020 (GradaWorld, 2020). By the end of March 2020, the number of cases had risen across every state in Malaysia. Hence, on 18th March 2020, the Malaysian government had imposed a nationwide lockdown known as the Movement Control Order (MCO) to control the spread of the pandemic. New norm as preventive actions such as wearing face masks, social distancing, hand washing, hand sanitizing, testing protocols, and quarantining positive and symptomatic COVID-19 patients were implemented. Other than that, the government has instructed lockdown to business and workplace closures, travel restrictions, as well as disinfected surfaces and areas related to COVID-19 infection. Most government and private institutions were partially or fully closed, events were cancelled and postponed, and only essential services and frontliners were allowed operation (Tang, 2020). The pandemic crisis has resulted disruption to health, social, politic and economic in the country.

## **Condition Of Covid-19 Pandemic Crisis at Construction Sites in Malaysia**

The COVID-19 pandemic crisis has left a lasting scar on the construction sector in Malaysia with delays, suspension and cost overruns of construction projects. According to Aziz and Kartono (2020), the government of Malaysia had imposed the Movement Control Order (MCO) on 18th March 2020 due to the rapid increase in positive cases as well as difficulty in tracing the contacts. It restricts movements and mass gathering at all places nationwide including religious services and demands closure of all premises and workplaces except for essential services. However, construction industry was not included as essential services and all sites were required to shut down. Later, construction sites were allowed to re-open on June 2020 with strict compliance to SOPs which include COVID-19 testing for all workers, social distancing rules, mandatory face masks and

proper sanitizing (The Pacific Association of Quantity Surveyors, 2020). SOP inspection was made to construction sites in Malaysia from 1 June to 18 August 2021 (CIDB Malaysia, 2021). From, the 7, 939 construction sites inspected, 3,762 sites had reopened, while 4,177 sites remain closed. The inspection results showed that 3,534 (94%) sites comply with SOP and 228 (6%) sites disobeyed the SOP.

## Prevention And Control Actions of Covid-19 At Construction Sites

Since there is no safe and reliable medication against COVID-19 yet, World Health Organization (WHO) has established a tight rule to be followed throughout the pandemic. Preventive procedures are the current strategy to limit the spread of COVID-19 cases (Guner et al., 2020). Preventive actions focus in avoiding the risk, meanwhile control actions are to reduce and manage the risk. Standard precautions are very important to set up and need to adhere to curb the spread of COVID-19 worldwide (Elengoe, 2020). Besides, the preventive and control actions are the basis for construction site to ensure the continuity of operation. Referring to Ministry of Health Malaysia (2021), appropriate steps to ensure maximum protection at construction sites to enable continuation of activities can be divided into four (4) main actions, which are action by employer, action by employees, action at workplace and action for travel considerations. This prevention and control actions of COVID-19 has clearly established the roles and responsibilities of every party in eradicating the crisis. The COVID-19 preventive and control actions at construction sites are summarized by action in Table 1.

**Table 1. Summary of COVID-19 Preventive and Control Actions at Construction Sites in Malaysia**

Main Action	Preventive and Control Actions
Action by Employer	Regular communication MySejahtera application Check-In Symptom's development Mental Health Assessment
Action by Employee	MySejahtera application QR code scanning Personal hygiene Social Distancing Preventive measures outside the site

Action at Workplace	Screening Workplace hygiene and cleaning Gathering considerations Work from home Transportation
Action for Travel Considerations	Before travelling During travelling After travelling

Source: Author

### Action by employer

Employer plays a huge responsibility in controlling construction personnel in the site. Employer coordinate communication and apply instruction to everyone within the company and project. Effective communication is needed in order to ensure essential element in managing construction projects is delivered to all parties in the team (Noor, Jaafar & Ramly,2021). The most important actions for the employer to undertake is to constantly communicate with the employees by providing guidance, reminders or daily COVID-19 information. In Malaysia, the government also took a proactive approach by developing a contact-tracing application known as MySejahtera to assist the government in managing the outbreaks and to enable the Ministry of Health to monitor the spread of the virus (Hasan, Mohamed & Yusoff, 2020). The employer is liable to register the premise, generate and print QR code to be displayed at the entry of the site for registration of employees and visitor (Ministry of Health Malaysia, 2021). Employer may obtain travel declaration from employees based on their travel history. This allows employer to track previous location of the person who develops symptoms as well as their closed contact. Besides, employer hold an important role in monitoring the condition of their employee mentally and physically to avoid from any unpredictable incident occurs, hence mental health assessments may be conducted on employee. In addition, this could contribute to alleviate fear and anxiety among the employee during this COVID-19 pandemic crisis (Ministry of Health Malaysia, 2020).

### Action by employee

In order to reduce the risk of COVID-19 transmission, employees also need to pull their weight in implementing preventative and control actions

at the construction sites. Handwashing has always been one of the most effective ways of keeping diseases at bay (Sharma, 2020). The employees are encouraged to wash hands for at least 20-30 seconds by following the appropriate steps after finishing their works. This is because 80% percent of infections are transmitted by hand. Furthermore, social distancing is advised by limiting contact between people. In construction sites, it is essential to utilize social distancing by maintaining 1 metre distance from other people especially in enclosed spaces, where it is advised to have less than 10 individuals within the space (DC Health, 2020). Preventive actions are key to reduce COVID-19 morbidity and mortality (Apanga, Lettor & Akunvane, 2021). As there is no permanent cure and treatment yet, employees should be cautious and take precautions in all movements especially outside the construction site. In addition, employee must stay alert when developing symptoms by wearing surgical mask, seek immediate treatment and avoid contact with fellow employees.

### **Action at workplace**

The best approach as for now is to prevent infection by avoiding being exposed to the COVID-19 virus. According to Ruffini, Sojourner and Wozniak (2021), the action of workplace screening normally includes several combinations of temperature checks and symptoms self-report. Screening is where employees who come to work at site every day should be checked to ensure no signs or symptoms developed which could lead to the presence of COVID-19. Those employees with temperature above 37.5 Celsius and those with other symptoms such as cough, sore throat or difficulty on breathing should seek assessment at a medical centre (Ministry of Health Malaysia, 2021). The most crucial actions must be taken at the workplace is to ensure regular cleaning and disinfection of the site including tools, machineries and high touch. This is because the COVID-19 virus could survive in certain types of surfaces such as plastic and stainless steel for more than 2 to 3 days. Other than that, the workplace hygiene and cleaning can be practiced by implementing no hand shaking and no hugs policy. Hand shaking is prohibited as it is the fastest way to spread the virus via face and body touching afterwards (MacLellan, 2020). Toilet facilities such as flush, ventilation and bidet must also be well-operated (DC Health, 2020). In addition, it is also recommended to provide proper trash can for disposal and cleaning supplies to disinfect an area that is possible or confirmed case.

Besides, mass gatherings are events with a high density of individual present at the venue for a specific time and it is highly likely be able to increase transmission of COVID-19 (World Health Organization, 2020). Therefore, employers must ensure all preventive actions are taken at the construction site such as good ventilation, personal hygiene and limitation of participants. In addition, opening windows and doors at site office are advisable to ensure ventilation systems operate properly as well as increase circulation of outdoor air (Centers for Disease Control and Prevention, 2021a).

### **Action for travel consideration**

The COVID-19 pandemic has changed the way of work, where business-related travel particularly international travel had decreased significantly (Sully & Jones, 2021). Traveling to other countries has been prohibited in Malaysia and all airports have forbidden foreign visitors except for specific business purposes with an approval. The Ministry of Health Malaysia (2021) has suggested to assess the benefit, risks and needs before traveling as well as to follow the latest advisory on traveling. Employee is advised to avoid crowded places and close contact with people if possible. A person who travels need to be aware of risks from large and mass events especially indoors (Wilson & Chen, 2020). Employee should keep at least 1 to 2 meters away from others. Additionally, home surveillance or quarantines procedure are required as accordance to Ministry of Health requirement. It is also encouraged to keep away from being around people who are at increased risk for severe illness for 14 days (Centers of Disease Control and Prevention, 2021b).

### **Action for travel consideration**

The COVID-19 pandemic has changed the way of work, where business-related travel particularly international travel had decreased significantly (Sully & Jones, 2021). Traveling to other countries has been prohibited in Malaysia and all airports have forbidden foreign visitors except for specific business purposes with an approval. The Ministry of Health Malaysia (2021) has suggested to assess the benefit, risks and needs before traveling as well as to follow the latest advisory on traveling. Employee is advised to avoid crowded places and close contact with people if possible.



A person who travels need to be aware of risks from large and mass events especially indoors (Wilson & Chen, 2020). Employee should keep at least 1 to 2 meters away from others. Additionally, home surveillance or quarantines procedure are required as accordance to Ministry of Health requirement. It is also encouraged to keep away from being around people who are at increased risk for severe illness for 14 days (Centers of Disease Control and Prevention, 2021b).

## **METHODOLOGY**

Data collection is the utmost important stage in this study in order to achieve desired objectives within the scope of the work (Lop, Ahmad & Zulkipli, 2016). This study adopted to analyse the preventive and control actions of COVID-19 at construction sites in Malaysia. Using the non-probability sampling approach i.e., purposive sampling, and also distribution of questionnaires to construction site personnel including professionals and workers. The questionnaire used 5-point Likert scale to survey on the actions implemented which are: 5-Full implementation, 4-Good implementation, 3-Partial implementation, 2-Poor implementation, and 1- No implementation. Besides, purposive sampling method was selected because the sample was based upon the criteria which comprises specialist knowledge on the research issue, capacity and willingness to participate in the research (Oliver, 2015). There were 7,552 construction sites in Malaysia (CIDB, 2020). This taken as the population. According to Adam (2020), the sample size suitable was 99 construction sites. This was determined by using Taro Yamane Formula.

The data were collected between Mac until June 2021 among construction site personnel in Malaysia. Due to the Movement Control Order (MCO) during the COVID-19 crisis, the government has restricted the movement which limits the researchers to distribute the questionnaire physically. Therefore, questionnaires were distributed via social media platform focus on construction related groups in Malaysia. By using Google form link, the questionnaires were shared via various online media platforms such as Telegram, WhatsApp, Facebook and Instagram. A total of 123 questionnaires were returned, however only 112 questionnaires were valid to be analysed due to several reasons such as inconsistent responses.

The Statistical Package for the Social Science (SPSS) version 20 was used as a tool to analyse the data obtained from the questionnaires. A measure of central tendency i.e., mean value was used to analyse the data as it is the method of a single value that describes a set of data by identifying the central position within that set of data.

## ANALYSIS AND FINDINGS

The findings for this study showed the prevention and control actions at construction sites in Malaysia based on mean value. There were four main actions taken by employer, employee, at workplace and for travel considerations. Under these main actions, there are detail actions that has been implemented at construction sites.

### Action By Employer

Table 2 shows the mean value of nine actions taken by employer on prevention and control of COVID-19 at construction site. The result shows that the action with the highest mean value was registered premise with MySejahtera. This was done by generating, printing and displaying QR code. The second highest was to encourage employees to take temperature regularly. The first rank and second rank action were implemented at construction sites in Malaysia as it achieved the mean value above 4.50. Both actions are the basic implementation of SOP by the employer at every workplace in Malaysia.

**Table 2. Mean Value of Action by Employer**

No	Action By Employer	Mean	Ranks
1	Communicate regularly to employees	4.33	4
2	Instruct supervisor to monitor for symptoms among employees	4.32	5
3	Encourage employees to take temperatures regularly	4.61	2
4	Register premise with MySejahtera by generating, printing and displaying QR Code	4.74	1
5	Obtaining travel declaration from employees	4.06	8
6	Advise employee to stay at home when develop symptoms.	4.25	6
7	Relieve employee from work if the employee develops symptoms at site	4.34	3

8	Conduct mental health assessments among employees	3.35	9
9	Monitor sick leave and attendance among employees	4.07	7
Overall Mean for Action by Employer: 4.23			

Source: Author

## Action By Employee

Table 3 shows the seven actions by employee. The findings present that scanning MySejahtera QR Code when entering the site was recorded the highest mean value, which parallel to the action by employer. MySejahtera is a mandatory action that must be implemented at every construction site as it is a formal instruction from the government that must be complied. Other actions that achieved the mean value which surpassed 4.50 were keep updating on COVID-19 news and always maintain good personal hygiene. These top three actions were most likely implemented at construction sites in Malaysia.

**Table 3. Mean Value of Action by Employees**

No	Action By Employee	Mean	Ranks
1	Keep updated on COVID-19 news	4.63	2
2	Scan MySejahtera QR code when entering site	4.84	1
3	Always maintain good personal hygiene	4.56	3
4	Practice social distancing at site by maintaining 1 meter distance	4.25	6
5	Limit food handling and sharing of food	4.03	7
6	Be alert when develop symptoms	4.39	5
7	Practice all preventive measures outside the site	4.40	4
Overall mean for action by employer: 4.44			

Source: Author

## Action At Workplace

Based on Table 4, twelve actions at workplace have been determined. The findings revealed that two actions recorded the mean value higher than 4.50 which are screening all employees who enter the site (first rank) and ensure taking all precautions when meeting indoor (second rank). Thus, both actions were highly implemented at construction sites in Malaysia as it recorded above 4.50 mean value. The screening which includes scanning MySejahtera is also parallel with the findings from action by employer

and employee at workplace in Malaysia. Furthermore, as advised by the Director-General of Ministry of Health, Malaysia, employees must avoid gathering in confined places and observe physical distancing at all times (Bernama, 2021a).

**Table 4. Mean Value of Action at Workplace**

No	Action At Workplace	Mean	Ranks
1	Screening of all employees who enter the site	4.65	1
2	Enforce hand sanitization at entrance	4.48	3
3	Ensure regular cleaning and disinfection of the site	4.29	9
4	Practice no hand shaking policy	4.44	5
5	Provide easy access to frequent hand washing for employees	4.34	7
6	Provide proper maintenance of toilet facilities with adequate supply of soap and disposal towels.	4.13	11
7	Provide lidded rubbish bins with regular refuse disposal	4.10	12
8	Apply alternate communication method	4.31	8
9	Avoid large meeting indoor or hold meetings outside in open air	4.46	4
10	Ensure taking all precautions when meeting indoor	4.54	2
11	Ensure employees give full commitment when working from home	4.41	6
12	Practice all preventive measures when using public transport	4.24	10
Overall mean for action at workplace: 4.37			

Source: Author

### Action For Travel Consideration

Table 5 shows action for travel consideration. Seven actions have been listed, where three actions show the highest mean value that exceed 4.50. The three highest rankings described that the actions were successfully implemented when travelling. The first rank is to make sure to bring surgical masks and hand sanitizer when travelling, followed by avoiding close contact with people and do not allow high risk employees to travel. The latest update, double-masking or wearing a cloth mask on top of a medical-grade mask helps filter more particles than wearing a single cloth mask alone (Bernama, 2021b).

Table 5. Mean Value of Action for Travel Consideration

No	Action for Travel Consideration	Mean	Ranks
1	Obtain all relevant information of travel from MOH or MKN	4.23	7
2	Follow the latest advisory on travelling.	4.37	5
3	Do not allow high risk employees to travel	4.58	3
4	Avoid crowded places when travelling	4.48	4
5	Avoid closed contact with people	4.61	2
6	Make sure to bring surgical masks and hand sanitizer when travelling	4.76	1
7	Observe home surveillance or quarantines procedure as per MOH requirement	4.29	6
Overall mean for action for travel consideration: 4.47			

Source: Author

## CONCLUSION

COVID-19 pandemic crisis has been widely spreading across the entire nation, posing a threat to all including the construction sector. The prevention and control actions are important to be implemented at construction sites as to prevent the transmission of COVID-19. There are four main actions taken as COVID-19 prevention and control actions at construction sites in Malaysia. The following are the findings of the research in analysing overall average mean for each main action:

- i. Action by Employer (9 actions) – overall mean: 4.23
- ii. Action by Employee (7 actions) – overall mean: 4.44
- iii. Action at Workplace (12 actions) – overall mean: 4.37
- iv. Action for travel consideration (7 actions) – overall mean: 4.47

The prevention and control actions by employee and action for travel consideration have achieved a higher overall mean. Meanwhile, action by employer and action at workplace has lower overall average mean value. However, the overall mean value for all the four actions is more 4.00 (even though less than 4.50). This demonstrated the good implementation level on COVID-19 prevention and control action at construction sites in Malaysia. These findings confirmed that the previous research findings by Azizi and Kartono (2020), where there is confusion on COVID-19 SOP

implementation at construction sites has been overcome by the construction players at sites by middle of the year 2021. This is because this data were collected between March until June 2021. It seems awareness programs on prevention and control actions by the authorities have taken place at construction sites. The cooperation between employer and employee has successfully shifted the paradigm on actions implemented towards avoiding COVID-19 at workplace and during traveling. This study concludes that construction sites in Malaysia adhere to the COVID-19 prevention and control actions by the government rules and guidelines. Thus, CIDB as the government agency responsible could create more awareness programmes and monitor the actions towards full implementation of COVID-19 prevention and control actions at construction sites in Malaysia.

## **ACKNOWLEDGEMENT**

This research was self-funded for the bachelor's degree final year research project at Universiti Teknologi MARA, Perak Branch. We would like to thank the anonymous reviewers for comments that greatly improved the manuscript.

## **FUNDING**

No funding for this research.

## **AUTHOR CONTRIBUTIONS**

All authors contributed to the design of the research, the questionnaire, and the write-up. The on-line survey, data cleaning and tabulation was undertaken by researcher. All authors have read and approved the final manuscript.

## **CONFLICT OF INTEREST**

The authors declare no conflict of interest.

## REFERENCES

- Adam, A. M. (2020). Sample Size Determination in Survey Research. *Journal of Scientific Research and Reports*, 26(5), 90-97.
- Ahmad, D. (2020, February 4). *Situasi terkini jangkitan 2019-ncov dan pengesanan kes baharu di malaysia*. Retrieved from Kementerian Kesihatan Malaysia: [https://www.penerangan.gov.my/japenv2/wp-content/uploads/2020/02/Kenyataan-Akhbar-KPK-Situasi-2019-nCoV-4-FEBRUARI-2020\\_edited-2.pdf](https://www.penerangan.gov.my/japenv2/wp-content/uploads/2020/02/Kenyataan-Akhbar-KPK-Situasi-2019-nCoV-4-FEBRUARI-2020_edited-2.pdf)
- Apanga, P. A., Lettor, I. B., & Akunvane, R. (2021). Practice of COVID-19 Preventive Measures and Its Associated Factors among Students in Ghana. *The American Journal of Tropical Medicine and Hygiene*, 104(2), 526-531.
- Araya, F. (2020). Modeling the spread of COVID-19 on construction workers: An agent-based approach. *Safety Science*, 1-8.
- Aziz, A., & Kartono, A. (2020, June 18). *Financial issues, SOP confusion drag construction restart*. Retrieved from The Malaysian Reserve: <https://themalaysianreserve.com/2020/06/18/financial-issues-sop-confusion-drag-construction-restart/>
- Bernama. (2021a, May 28). *Double-masking helps filter more particles, says Dr Noor Hisham*. Retrieved from The Edge Market: <https://www.theedgemarkets.com/article/doublemasking-helps-filter-more-particles-says-dr-noor-hisham>
- Bernama. (2021b, January 2021). *COVID-19: Spike in workplace clusters worrying - Health DG*. Retrieved from Bernama: [https://www.bernama.com/en/general/news\\_covid-19.php?id=1925094](https://www.bernama.com/en/general/news_covid-19.php?id=1925094)
- Centers for Disease Control and Prevention. (2021a, May 20). *Events & Gatherings*. Retrieved from CDC: <https://www.cdc.gov/coronavirus/2019-ncov/community/large-events/considerations-for-events-gatherings.html>

- Centers for Disease Control and Prevention. (2021b, May 19). *Domestic Travel During COVID-19*. Retrieved from CDC: <https://www.cdc.gov/coronavirus/2019-ncov/travelers/travel-during-covid19.html>
- CIDB Malaysia. (2020, December 21). *Kontraktor ingkar sop boleh dibatalkan pendaftaran*. Retrieved from CIDB: <https://www.cidb.gov.my/sites/default/files/2020-12/CIDB%20Pematuhan%20SOP%20COVID-19%20-%20Kenyataan%20Media%2C%20Final%20%282020.12.21%29.pdf>
- CIDB Malaysia. (2021, August 18). *55 kes positif:6 tapak pembinaan di kedah diarah tutup*. Retrieved from CIDB : <https://www.cidb.gov.my>
- DC Health. (2020). *COVID-19 Guidelines for Construction Sites within the District of Columbia*. Retrieved from DTAP: <https://dtap.ddot.dc.gov/Document/COVID-19%20Guidelines%20for%20Construction%20Sites%20for%20DTAP.pdf>
- Elengoe, A. (2020). COVID-19 Outbreak in Malaysia. *Osong public health and research perspectives*, 11(3), 93-100. doi:<https://doi.org/10.24171/j.phrp.2020.11.3.08>
- Goodman, J. (2020, April 30). *The new normal: 8 ways the coronavirus crisis is changing construction*. Retrieved from Construction Dive: <https://www.constructiondive.com/news/the-new-normal-8-ways-the-coronavirus-crisis-is-changing-construction/576681/>
- Guner, R., Hasanoglu, I., & Aktas, F. (2020). COVID-19: Prevention and control measures in community. *Turkish Journal of Medical Sciences*, 571-577. doi:[doi:10.3906/sag-2004-146](https://doi.org/10.3906/sag-2004-146)
- Hasan, S. S., Mohamed, D., & Yusoff, Y. B. (2020). Mysejahtera app and the privacy rights in times of covid-19: *the legal and syariah perspectives*. *INSLA E-Proceedings* , 3(1), 574-580.
- Ismail, S., Rani, N. I., & Arof, K. Z. (2020). *Challenges of construction players in managing asset and project in the new norm*. 21-25.



- Lop, N. S., Ahmad, A. C., & Zullkipli, N. A. (2016). The Implementation of Green Building In Malaysian Construction Industry: Determination of Key Success Factors . *Malaysian Journal of Sustainable Environment*, 64-79.
- MacLellan, L. (2020, March 11). *Coronavirus: Here's how to avoid handshakes without offending anyone*. Retrieved from World Economic Forum.
- Ministry of Health Malaysia. (2020, April). *COVID-19 Mental Health Kit in Hospital Setting and Quarantine Centre*. Retrieved from MOH: [https://www.moh.gov.my/moh/resources/penerbitan/Garis%20Panduan/Umum%20\(KKM\)/Kit\\_Kesihatan\\_Mental\\_COVID-19.pdf](https://www.moh.gov.my/moh/resources/penerbitan/Garis%20Panduan/Umum%20(KKM)/Kit_Kesihatan_Mental_COVID-19.pdf)
- Ministry of Health Malaysia. (2021, February 15). *Annex 25: covid-19 management guidelines for workplaces*. Retrieved from MOH: [http://covid-19.moh.gov.my/garis-panduan/garis-panduan-kkm/ANNEX\\_25\\_COVID-19\\_MANAGEMENT\\_GUIDELINES\\_FOR\\_WORKPLACES.pdf](http://covid-19.moh.gov.my/garis-panduan/garis-panduan-kkm/ANNEX_25_COVID-19_MANAGEMENT_GUIDELINES_FOR_WORKPLACES.pdf)
- Noor, S. N., Jaafar, N. S., & Ramly, M. K. (2021). The Benefits and Challenges of Social Media in Construction Industry: A Perspective from Construction Professionals. *Malaysian Journal of Sustainable Environment*, 35-53.
- Oliver, P. (2006). *Purposive Sampling*. Retrieved from Sage Research Methods: <https://methods.sagepub.com>
- Ruffini, K., Sojourner, A., & Wozniak, A. (2021). Who's in and who's out under workplace COVID symptom screening? *Journal of Policy Analysis and Management*, 40(2), 614-641.
- Shah, A. U., Safri, S. N., Thevadas, R., Noordin, N. K., Rahman, A. A., Sekawi, Z., Sultan, M. T. (2020). COVID-19 outbreak in Malaysia: Actions taken by the Malaysian government. *International Journal of Infectious Diseases*, 2-9.
- Sharma, S. (2020, October 15). *Handwashing an effective tool to*

- prevent COVID-19, other diseases. Retrieved from World Health Organization: <https://www.who.int/southeastasia/news/detail/15-10-2020-handwashing-an-effective-tool-to-prevent-covid-19-other-diseases>
- Shereen, M. A., Khan, S., Kazmi, A., Bashir, N., & Siddique, R. (2020). COVID-19 infection: Origin, transmission, and characteristics of human coronaviruses. *Journal Of Advanced Research*, 91-98.
- Sully, C., & Jones, M. (2021, January 2021). *Business Travel During The COVID-19 Pandemic: Considerations For Employers*. Retrieved from Mondaq: <https://www.mondaq.com/canada/employment-and-workforce-wellbeing/1028772/business-travel-during-the-covid-19-pandemic-considerations-for-employers>
- Tang, K. H. (2020). Movement control as an effective measure against Covid-19 spread in Malaysia: an overview. *Zeitschrift für Gesundheitswissenschaften, Journal of Public Health*, 1-4. doi:<https://doi.org/10.1007/s10389-020-01316-w>
- The Pacific Association of Quantity Surveyors. (2020). *Update of Covid-10 effects on Construction Industry in Malaysia*. Retrieved from PAQS: <http://paqs.net/sites/default/files/7.%20Report%20from%20Malaysia%20RISM.pdf>
- Wilson, M. E., & Chen, L. H. (2020). Re-starting travel in the era of COVID-19: preparing anew. *Journal of Travel Medicine*. doi:10.1093/jtm/taaa108
- World Health Organization (WHO). (2021). *WHO Coronavirus (COVID-19) Dashboard1*. Retrieved from World Health Organization: <https://covid19.who.int/table>
- World Health Organization. (2020, May 14). *Considerations for Mass Gatherings in the context of COVID-19: Annex: considerations in adjusting public health and social measures in the context of COVID-19*. Retrieved from World Health Organization: <https://www.who.int/publications/i/item/considerations-for-mass-gatherings-in-the-context->

of-covid-19-annex-considerations-in-adjusting-public-health-and-social-measures-in-the-context-of-covid-19

World, G. (2020). *Malaysia: First cases of 2019-nCoV confirmed* January 25. Retrieved from Garda: <https://www.garda.com>