



Non-conformity to social distancing rules give rise to various COVID-19 clusters in Malaysia

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Abstract: Coronavirus disease 19 (COVID-19) can be transmitted via contact with affected individuals and social distancing is widely practiced as a public preventive measure to contain the disease. Social distancing implementation includes maintaining at least one-meter distance between every individual, avoiding mass gatherings and staying out of crowded places. To ensure successful implementation of social distancing, many countries including Malaysia have opted for Movement Control Order (MCO). Under MCO, mass assembly of cultural, religious, and social events are prohibited, education institutions, government, and public premises are closed and strict restrictions to leave and enter the country. Here, we provide several clusters of COVID-19 cases in Malaysia that emerged due to non-conformity to social distancing. Our report is thus providing informed decision to policy makers for designing a better pandemic response plan in the country.

Keywords: COVID-19 clusters; Movement Control Order; social-distancing; COVID-19 spread; disease prevention

1. Introduction

The spreading of Coronavirus disease 19 (COVID-19) was declared a Public Health Emergency of International Concern by World Health Organization (WHO) on 30th January 2020 and by 11th March 2020, emerged to become a pandemic due to international mobility. At present, 41.1 million cases with 1.13 million deaths are reported worldwide, either after inhaling or having contact with respiratory droplets (coughing or sneezing) of infected individuals [1]. This disease is caused by a new coronavirus strain termed as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) which shared 79.5 percent homology with the previously identified SARS-CoV [2,3]. In the absence of specific drugs or vaccination against SARS-CoV-2, social distancing, personal hygiene and wearing personal protective equipment (PPE) were introduced as advisory interventions that delays the spreading of COVID-19. Social distancing was shown to be an effective way to slow down or prevent the spread of COVID-19. In fact, this public health advisory was used successfully with SARS-CoV in 2002 and Middle East respiratory syndrome coronavirus (MERS-CoV) in 2012 [4,5].

Social distancing is a general recommendation by Centers for Disease Control and Prevention (CDC) to contain COVID-19 [6] with adoptions like 1-meter distance between

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every individual, refrain from mass gatherings, avoiding of crowded places and the use of contactless technology in services and operations. Therefore, Malaysia adapts the social distancing recommendation into their Movement Control Order (MCO) by encouraging its citizens to stay at home in which, essential sectors like resources (grocery), services (telecommunication, insurance, finance and banking), productions (food and merchandise) and medicals are allowed to operate with strict protocols, public gatherings were banned, education sector uses e-learning and every other sector uses online communication via Webex, Zoom, Google Meet, Skype, etc. to resume operations. These community mitigation measures have been proven effective in flattening COVID-19 transmission curve and delay the exponential spread of SARS-CoV-2 [7,8]. Despite that, MCO and thus social distancing compliance in Malaysia is not 100 percent, giving rise to various COVID-19 clusters in the country [9]. Thus, this paper will focus on the effect of non-conformity to social distancing rules towards COVID-19 incidence rate and cluster of infection in Malaysia.

2. Materials and Methods

Our data collection is based on rapid released analysis by Daily Press Conference from Ministry of Health (MOH) Malaysia, MOH website, newspaper reports, as well as observation on trusted social media platforms. The latter includes social media posting from government and relevant stakeholders, for example Facebook posting from National Crisis Preparedness & Response Centre (CPCR) and MOH Malaysia. On the Daily Press Conference, Director-General of Health will update new cases, new recovered cases, new deaths, and total confirmed cases together with the presence of new and active clusters along with their origins for the entire Malaysia (13 states and 3 federal territories). Data collection also includes literature search of related COVID-19 articles in Malaysia. String words like 'covid-19', 'ministry of health', 'cases', 'recovery', 'hospital', 'movement control', 'fines', 'mass gathering', 'social distancing', 'Malaysia' and 'enforcement' are used independently and together during the literature search in Scopus, Pubmed, or Google Scholar.

3. Results

At the time of writing, Malaysia is experiencing an increasing number of daily new COVID-19 cases which is due to both sporadic and cluster cases. On 29th April 2020, 5,945 COVID-19 cases are reported in Malaysia where 4,300 (72% of total COVID-19 patients) of these cases have clustering origin (Table 1 and Figure 1). The highest number of COVID-19 cases were linked to the Sri Petaling cluster (2,287 cases) that occurred due to a large-scale religious event in Kuala Lumpur from 27th February to 1st March 2020 [9]. This followed by Hulu Langat, Pesantren and Kluang clusters, all with 3 digit cumulative cases. Altogether, there were four MCO phases in Malaysia; phase I from 18th March to 31st March 2020, phase II from 1st April to 14th April, phase III from 15th April to 28th April 2020, and phase IV from 29th April to 12th May 2020 that were enforced to reduce disease clustering and prevent the widespread of COVID-19 disease [9].

Table 1. Details of COVID-19 clusters in Malaysia [10].

No.	Cluster	Cluster identified (announced by MOH)	Expected origin
1	Sri Petaling	14 th March 2020	Unidentified
2	Bandar Baru Bangi	6 th April 2020	Unidentified
3	Person Under Investigation (Italy)	6 th April 2020	Import
4	Religious Assembly (Sarawak)	6 th April 2020	Unidentified
5	Person Under Investigation (Bali)	13 th April 2020	Import
6	Health Staff (Sabah)	18 th April 2020	Wedding gathering, Ipoh
7	Magetan Student (Indonesia)	19 th April 2020	Import
8	Pengerang	22 nd April 2020	Personal activities (Cross State)
9	Malayan Mansion	7 th April 2020	Sri Petaling
10	Selangor Mansion	7 th April 2020	Sri Petaling
11	Menara City One	8 th April 2020	Sri Petaling
12	Hulu Langat	30 th March 2020	Sri Petaling
13	Kluang	27 th March 2020	Sri Petaling
14	Sarawak General Hospital	29 th April 2020	Religious Assembly (Sarawak)
15	Sendayan	14 th April 2020	Sri Petaling
16	Lanchang	2 nd May 2020	Sri Petaling
17	KL Wholesale Market	19 th April 2020	Sri Petaling
18	Construction	3 rd May 2020	KL Wholesale & Kampung Baru
19	Kampung Baru	14 th April 2020	Sri Petaling
20	Chow Kit Market	24 th April 2020	Sri Petaling
21	Selayang Baru	28 th April 2020	Sri Petaling
22	Pesantren	21 st April 2020	Indonesia
23	Bahau Market	26 th April 2020	KL Wholesale
24	Jalan Othman Market	27 th April 2020	Sri Petaling
25	*Madrasah Sungai Lui	12 th April 2020	Sri Petaling
26	*Health Staf (Kuching)	15 th April 2020	Religious Assembly (Sarawak)
27	*Pedas	8 th April 2020	Rembau
28	Madrasah Jerantut	12 th April 2020	Sri Petaling
29	Madrasah Penanti	12 th April 2020	Sri Petaling
30	Madrasah Jasin	12 th April 2020	Sri Petaling
31	Rembau	8 th April 2020	Sri Petaling

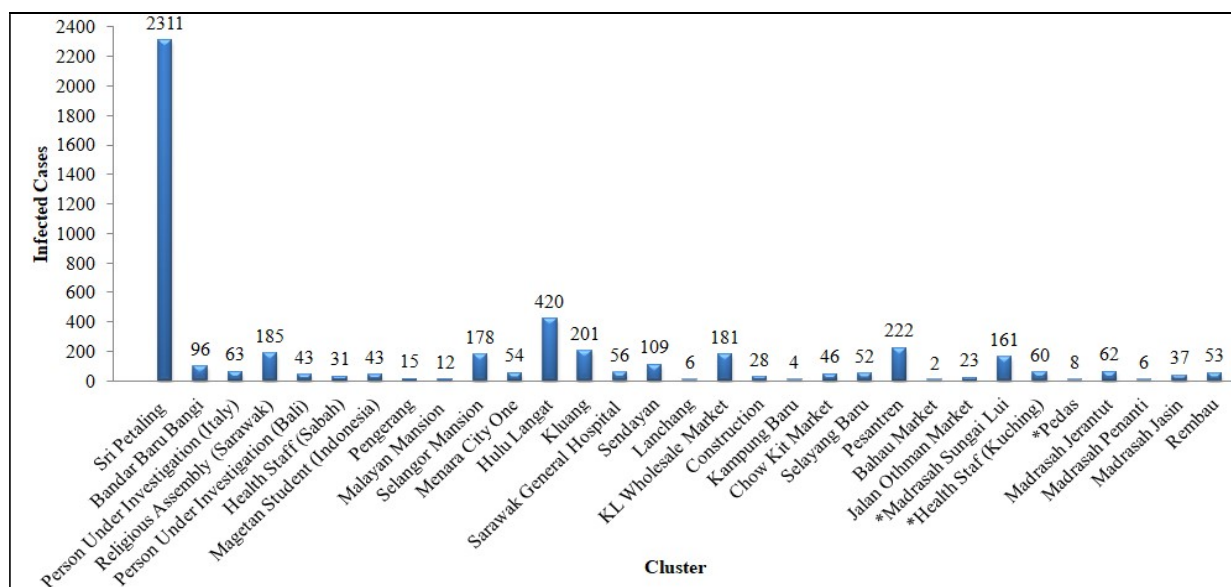


Figure 1. COVID-19: Number of infected cases against the number of clusters that develop from disobedience during social distancing.

4. Discussion

WHO has launched the “2019 Novel Coronavirus (2019-nCoV): Strategic Preparedness and Response Plan” on 3rd February 2020 which contains mitigation strategies to detect and contain massive spread of COVID-19 via human to human transmission. The plan was also designed to reduce negative impacts of COVID-19 on social, economic, and healthcare settings [11]. Four transmission scenarios for COVID-19 were proposed by WHO (i.e. no reported cases, sporadic cases, cluster of cases, and community transmission) and each country can then adjust their preventive measures based on local context [12]. In general, preventive responses such as case finding, contact tracing, and quarantine can be applied in all transmission scenarios but should be intensify with the increasing number of positive COVID-19 cases. For example, travel and movement restrictions can be adopted as part of quarantine procedures in countries with community outbreak because contact tracing and isolation may no longer sufficient to stop transmission and disease spread [13].

In Malaysia, increasing number of daily new COVID-19 cases were observed started from March 2020 which indicate the failure of social distancing in the country as a preemptive strategy to reduce the risk of COVID-19 spread [10,14]. This is particularly true because mass gathering associated with culturally and religious events that lead to cluster cases such as Sri Petaling, Simpang Rengam, and Bangi took place after the first COVID-19 case was recorded in the country, which was on the 25th February 2020. Several clusters of COVID-19 cases were also detected during MCO which further reflect non-compliance to social distancing. Thus, the Malaysian government introduced an enhanced MCO (i.e. CMCO from 13th May to 9th June) in point-sources experiencing massive COVID-19 outbreaks where strict enforcement (army and barricades) successfully broke spread chains [15]. In addition, the introduction of a mobile application (MyTrace) by the Ministry of Science, Technology and Innovation (Malaysia) has improved the contact tracing measures while also providing awareness to persons that may have contact with COVID-19 infected [16]. MyTrace uses Bluetooth technology to measure distances between every MyTrace user. [17]. A similar application (TraceTogether) is released by Singapore on 20th Mac 2020 and it was successful to indicate the presence of COVID-19 infected individuals with sensitivity up to 2 meters [18]. Both, MyTrace and TraceTogether mobile applications encourage users to keep their social distancing so that contact tracing breaks COVID-19 spreading in all communities.

After a series of MCO and CMCO that lasted continuously nearly for three months, Malaysia has brought its COVID-19 curve into a continuous flat [9,15]. This is because the government obeyed the preventive measures recommended by WHO [10]. Discipline from members of the public would have shortened the duration of MCO and produced a smaller number of infected cases as presented by Thailand, Vietnam, Cambodia, Myanmar and Brunei [19-21]. It was non-compliance towards social distancing that spawned clustering cases and the need to implement enforcement during MCO and EMCO. Therefore, public preventive measures such as social distancing, hand hygiene and personal protections devices together with MCO and EMCO can be adopted for future outbreaks. Currently, Malaysia is under recovery MCO (i.e. RMCO from 10th June to 31st December 2020) with the primary aim to stimulate economic growth [22]. The lifting of MCO and CMCO opened the borders of Malaysia for local and international mobility. Unfortunately, in October 2020, thousands of Malaysians are becoming infected with COVID-19 linked to hundreds of COVID-19 clusters detected in states like Sabah, Kedah, Selangor and Putrajaya [10].

5. Conclusions

Overall, our study supports the importance of social distancing to contain COVID-19. However, the effectiveness of this preventive measure depends on the great support from the public. In Malaysia, non-conformity to social distancing has given rise to various COVID-19 clusters even after the enforcement of MCO. Therefore, our report pro-

vides informed decision to policy makers for designing a better pandemic response plan in the country.

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References

1. World Health Organisation. Available online: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports>. (Accessed on 23 April 2020).
2. Keshtkar-Jahromi, M.; Sulkowski, M.; Holakouie-Naieni, K. Public Masking: An Urgent Need to Revise Global Policies to Protect against COVID-19. *Am J Trop Med Hyg* 2020, 102,1160-1. DOI:10.4269/ajtmh.20-0305.
3. Guo, Y.R.; Cao, Q.D.; Hong, Z.S.; Tan Y.Y.; Chen, S.D.; Jin, H.J.; et al. The origin, transmission and clinical therapies on coronavirus disease 2019 (COVID-19) outbreak—an update on the status. *Mil Med Res* 2020, 7, 1-10. DOI: 10.1186/s40779-020-00240-0.
4. To, K.K.W.; Hung, I.F.N.; Chan, J.F.W.; Yuen, K.Y. From SARS coronavirus to novel animal and human coronaviruses. *J Thorac Dis* 2013, 5, S103. DOI: 10.3978/j.issn.2072-1439.2013.06.02.
5. World Health Organisation. Available online: https://www.who.int/csr/disease/coronavirus_infections/faq/en/. (Accessed on 23 April 2020).
6. Centres for Diseases Control and Prevention. Available online: <https://www.cdc.gov/coronavirus/2019-ncov/downloads/community-mitigation-strategy.pdf>. (Accessed on 23 April 2020).
7. Ebrahim, S.H.; Ahmed, Q.A.; Gozzer, E.; Schlagenhauf, P.; Memish Z.A. Covid-19 and community mitigation strategies in a pandemic. *BMJ* 2020, 368, m1066. DOI: 10.1136/bmj.m1066.
8. Matrajt, L.; Leung, T. Evaluating the effectiveness of social distancing interventions to delay or flatten the epidemic curve of coronavirus disease. *Emerg Infect Dis* 2020, 26, 1740-8. DOI: 10.3201/eid2608.201093.
9. Mat, N.F.C.; Edinur, H.A.; Razab, M.K.A.A.; Safuan, S. A single mass gathering resulted in massive transmission of COVID-19 infections in Malaysia with further international spread. *J Travel Med* 2020, 27, taaa059. DOI: 10.1093/jtm/taaa059.
10. Ministry of Health Malaysia. Available online: <http://www.moh.gov.my/index.php/pages/view/2019-ncov-wuhan>. (Accessed on 7 May 2020).
11. World Health Organisation. Available online: <https://www.who.int/docs/default-source/coronaviruse/srp-04022020.pdf>. (Accessed on 7 May 2020).
12. World Health Organisation. Available online: <https://apps.who.int/iris/rest/bitstreams/1272587/retrieve>. . (Accessed on 23 April 2020).
13. World Health Organisation. Available online: <https://apps.who.int/iris/bitstream/handle/10665/259884/9789241513623-eng.pdf;jsessionid=204ACE5B78E01D2A0FA7A3C6BCDE9468?sequence=1>. (Accessed on 23 April 2020).
14. Yezli, S.; Khan, A. COVID-19 pandemic: It is time to temporarily close places of worship and to suspend religious gatherings. *J Travel Med* 2020, taaa065. DOI: 10.1093/jtm/taaa065.
15. New Straits Times. Available online: <https://www.nst.com.my/news/nation/2020/03/579651/emco-enforced-kl-skyscraper-3200-affected>. (Accessed on 23 April 2020).
16. TheStar. Available online: <https://www.thestar.com.my/news/nation/2020/05/08/data-from-covid-19-app-mytrace-kept-on-phone-not-govt-servers-says-khairy>. (Accessed on 23 April 2020).
17. Astro Awani. Available online: <http://www.astroawani.com/berita-malaysia/covid-19-malaysia-siapkan-aplikasi-telefon-pintar-kesan-pergerakan-individu-235458>. (Accessed on 23 April 2020)
18. TheStar Available online: <https://www.thestar.com.my/tech/tech-news/2020/03/20/covid-19-singaporelaunches-contact-tracing-mobile-app-to-track-coronavirus-infections>. (Accessed on 23 April 2020).

19. World Health Organisation. Available online: https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200505covid-19-sitrep-106.pdf?sfvrsn=47090f63_2. (Accessed on 23 April 2020).
20. Dinh, L.; Dinh, P.; Nguyen, P.D.; Nguyen, D.H.; Hoang, T. Vietnam's response to COVID-19: prompt and proactive actions. *J Travel Med* 2020, 27, taaa047. DOI: 10.1093/jtm/taaa047.
21. Wong, J.; Abdul Aziz, A.B.; Chaw, L.; Mahamud, A.; Griffith, M.M.; Ying-Ru, L.; et al. High proportion of asymptomatic and presymptomatic COVID-19 infections in travelers and returning residents to Brunei. *J Travel Med* 2020, 27, taaa066. DOI: 10.1093/jtm/taaa066.
22. Malay Mail Available online: <https://www.malaymail.com/news/malaysia/2020/06/07/pm-cmco-to-be-replaced-with-recovery-movement-control-order-with-further-re/1873225>. (Accessed on 18 July 2020).