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Containment and Mitigation Measures of COVID-19-A Scoping Review

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Abstract:

The epidemic of Coronavirus Disease 2019 (Covid-19) in China and a number of countries had led to the Covid-19 pandemic declaration by WHO. The aim of this study is to assess the evidence and to report the effectiveness of Covid-19 containment and mitigation measures among the affected countries. A comprehensive search strategy was performed using the MESH terms of "Novel coronavirus," "Novel coronavirus 2019", "2019 nCoV", "Covid-19", "Wuhan coronavirus", "SARS-CoV-2", "Containment", "Mitigation" and "Control". After completion of the initial screening, 922 articles were excluded for the following reasons: the article did not meet the inclusion criteria (N = 862), the article was a duplicate (N = 60). The remaining 72 articles were screened at the full-text level. After full review for relevancy, 41 articles were excluded and a total of 31 articles were selected for scoping review. The two most successful countries that managed to control this pandemic were Hong Kong and South Korea. While, the United States of America (USA) and Brazil are the countries yet unable to significantly reduce the Covid-19 cases. The aggressiveness of government efforts and the compliance among the population are the main factors contributing to the effectiveness of the containment and mitigation measures implemented.

Keywords:
COVID-19; pandemic; containment; mitigation

I. Introduction

In December 2019, Wuhan City, Hubei province in China experienced an unprecedented outbreak of pneumonia of unknown aetiology (Chaolin et al., 2020). Most of the infected patients had developed mild symptoms such as dry cough, sore throat, and fever (Eunha et al., 2020). However, some have developed various fatal complications including organ failure, septic shock, pulmonary oedema, severe pneumonia, and acute respiratory distress syndrome that required specialized management at intensive care units (Catlin et al., 2020). The epidemiology of this unknown disease is still being investigated and the virus was later identified from the throat swab samples of the cases (Catlin et al., 2020). This disease was subsequently named Severe Acute Respiratory Syndrome Coronaviru-2 (SARS-CoV-2) (Ren et al., 2020) and later, the World Health Organization (WHO) renamed this viral disease as COVID-19 (WHO, 2020a). As of January 30, 2020, 7734 cases have been confirmed in China and 90 other cases have also been reported from many countries in Asia, Europe and America (Hussin & Siddappa, 2020). Subsequently, the number of cases rose quickly and as of 16 February 2020, WHO reported 51,174 confirmed cases in China and the number of cases out of China has reached 51,857 (Hussin & Siddappa, 2020). This phenomenon has led WHO to declare COVID-19 as pandemic on March 11, 2020 (Lancet, 2020). At the time of preparing this manuscript (04 May 2020), WHO reported laboratory-confirmed COVID-19 cases and deaths worldwide which stood at 3,349,786 and 238,615 respectively (WHO, 2020b).

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The continuous rise in confirmed cases of COVID-19 may exert a huge burden on populations, health systems and economies among of the world, which the affected countries can ill afford (Chenghu et al., 2020). The patterns of the viruses spread from China to other Asia countries, Europe, Middle East and the United States of America, represent a global pandemic threat which requires drastic steps and actions (Ataguba, 2020). It remains uncertain whether this uncontrolled pandemic can be prevented and controlled due to the acceleration of global urbanization, increased concentration of populations, more frequent and complex interactions, and shortage of medical protection in developing countries (Chenghu et al., 2020; Ningrum et al).

Based on the WHO guidance on the dynamics of pandemics, most of the countries affected by the COVID-19 pandemic were recommended to adopt the containment and mitigation measures in order to control the disease from spreading (WHO, 2020b). Briefly, the containment measures aimed at preventing the disease from taking hold, encompassing early detection, isolation, and care of people already infected, with careful tracing and screening of their contacts. While, mitigation measures aimed at reducing the impact and its incidence, as well as disruptions to economic, political, and social systems, encompassing social distancing strategies such as the cancellation of conferences and other large gatherings, reducing non-essential use of public transport, and closure of schools (WHO, 2020b). China had shown that harsh containment and mitigation measures such as, quarantine, social distancing, and isolation of infected populations can contain the pandemic. However, it is an uphill task for the other affected countries to implement the same stringent measures to their population and such strategies are unlikely to be replicated (Anderson et al., 2020).

In view of the above scenario, it is crucial to explore relevant evidence on current COVID-19 pandemic containment and mitigation measures adopted by affected countries other than China. We hope our study findings will provide important reference data to policy makers in containment and mitigation efforts of the emergence of this pandemic. Therefore, the objective of this study is to assess the evidence and to identify the best containment and mitigation measures used among the countries affected by COVID-19 pandemic.

II. Research Method

In our study, a scoping review approach in searching, screening, reviewing and data extraction was applied based on framework by Arksey and O'Malley (Arksey & O'Malley, 2005). The stages of scoping review framework in our study include: identifying the research objectives, identifying relevant studies, study selection, charting the data, summarizing, and reporting the result (Arksey & O'Malley, 2005).

Scoping review methodology was selected over that of systematic review due to limited literature based on our topic of enquiry (The Joanna Briggs Institute, 2015). Selection criteria for the search are articles in English published from January 1, 2020 to 31 March 2020 and related to measures in COVID-19 containment and mitigation control from the countries with confirmed cases of more than fifty. We excluded publications such as articles and reports that did not include containment or mitigation measures.

A comprehensive search strategy was performed, which includes published scientific journals, unpublished work, grey literature, such as: i. Electronic databases of Medline/Pubmed, Science Direct, Web of Sciences and Scopus; ii. Relevant research websites such as WHO, Google Scholar; iii. Bibliographic search of reports, summaries, newsletters, and references from selected articles or bulletin from the WHO and Ministry of Health; iv. Other sources included information from experts in the relevant agencies, research fields from countries all over the world.

The search was conducted with medical subject headings (MeSH) terms, including "Novel coronavirus," "Novel coronavirus 2019", "2019 nCoV", "COVID-19", "Wuhan coronavirus", "SARS-CoV-2", "Containment", "Mitigation" and "Control". All references of retrieved articles were further searched for identification of other potential articles. Two reviewers independently screened all references from the articles search and then reached consensus on which met the eligibility criteria. Non-English language articles were excluded as the translation was not practical.

Data from the articles were extracted and summarized on a standardized form with the data reviewed by both authors (JSMS and NCAR). Data collected included the following: author(s)/ year of publication, country, type of publication, type of containment measures such as self-isolation and screening, type of mitigation measures such as social distance, movement restriction/travel, partial lockdown and prohibition of mass gathering, date of first case occurred, number of cases and fatality at 31 March 2020 and source of data. The characteristics of the selected articles were described based on the types of containment and mitigation of the study in various countries (excluding China).

The study was registered under the National Medical Research Register (NMRR) and the ethical approval was obtained from the Medical Research and Ethics Committee (MREC), Ministry of Health Malaysian (NMRR-20-624-54449).

III. Results and Discussion

3.1 Results

All included studies were published between 2019 and 2020. A total of 996 sources of evidence identified from the literature search and grey literature hand search were included in the review, representing the types of containment and mitigation from four regions; i. Western Pacific and South East Asia (Australia, Singapore, Philippines, and Hong Kong), ii. European (Spain, France, Germany, United Kingdom, Netherland, Norway, and Austria), iii. Eastern Mediterranean (Bahrain), and iv. The Americas (USA, Canada, and Brazil). After the completion of the initial screening, 922 articles were excluded for the following reasons; the article did not meet the inclusion criteria (N = 862); the article was a duplicate (N = 60).

The remaining 72 articles were screened at the full-text level. After full review for relevancy, another 41 articles were excluded and a total of 31 articles were selected for final review (Figure 1). Out of 31 articles, there were 15 articles from journals, seven reports and nine press statements. Of these, eight (26%) articles from Western Pacific and South East Asia Region, 16 (52%) articles from European Region, one (3%) from Eastern Mediterranean Region and six (19%) from Region of The Americas (Figure.1).

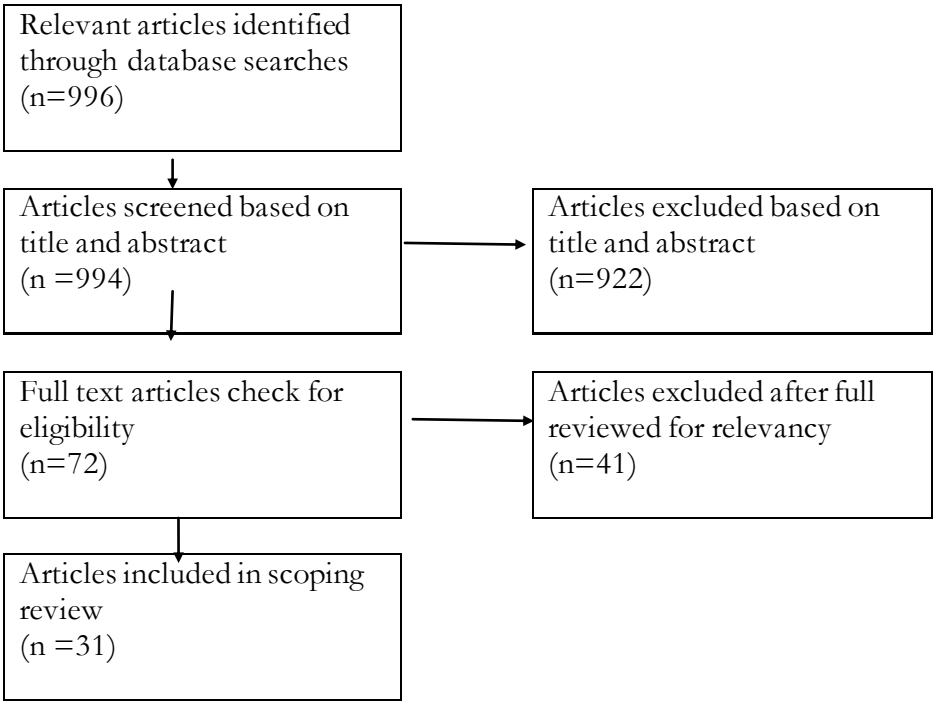

Figure 1. Flow Diagram for the Scoping Review Process Selection of Articles

The Western Pacific and South East Asia Regions such as South Korea, Japan, Australia, Philippines, Singapore, and Hong Kong had adopted the containment in order to control the disease. Containment measures, aimed at preventing the disease from taking hold, encompassing early detection, isolation, and care of infected people already infected, with careful tracing and screening of their contacts. In South Korea and Japan, containment and mitigation measures in COVID-19 transmission control are self-isolation, screening, and movement restriction/travel (Power, 2020; Wikipedia, 2020a).

In Singapore, Australia, Hong Kong and Philippines, the control measures used were self-isolation, movement restriction/travel and prohibition of mass gathering (Pung et al., 2020; Lee et al., 2020; Wong et al., 2020; Communicable Diseases Network Australia, 2020; Cowling et al., 2020; Dudu, 2020). In addition, the Australia, Hong Kong and Philippines, adopted extra control measures, namely social distancing, and partial lockdown (Communicable Diseases Network Australia, 2020; Cowling et al., 2020; Duddu, 2020) (Table 1).

The European Region such as Spain, France, Germany, Switzerland, United Kingdom, Netherland, Sweden, Norway and Austria had adopted a few strategies to control the disease. The containment and mitigation control measures in Spain were self- isolation, social distance, movement restriction/travel and partial lockdown (Aleta & Moreno, 2020). In France and United Kingdom, containment and mitigation measures in COVID-19 transmission control were only screening and self-isolation (Sibylle et al., 2020; Mohammad et al., 2020; Moss et al., 2020; Flear et al., 2020).

Containment and mitigation measures in Germany, Switzerland and Netherland were social distancing, self-isolation, movement restriction/travel and prohibition of mass gathering (Wikipedia, 2020b; Joachimet al., 2020; The Federal Council of Swiss Governmenmt, 2020; Salathe, 2020; Government of The Netherland, 2020).

In Sweden, containment and mitigation measures in COVID-19 transmission control were self-isolation, movement restriction/travel, partial lockdown and prohibition of mass gathering (Christina & Hendrik, 2020). In Norway, Austria, Belgium and Italy, containment and mitigation measures announced included self-isolation, social distance, movement restriction/travel, partial lockdown and prohibition of mass gathering (Nikel, 2020; Neghaiwi, 2020; Federal Government, 2020; Brzozowski, 2020; De Giorgio, 2020). However, Norway and Italy governments added an extra control measure, namely screening (Nikel, 2020; De Giorgio, 2020) (Table 1).

In Eastern Mediterranean Region and Region of Americas, containment and mitigation measures in COVID-19 transmission control adopted in Bahrain and USA, were self-isolation, social distance, movement restriction/travel and prohibition of mass gathering (Gardaworld, 2020; Peak et al., 2020; Berger et al., 2020; Liu, 2020).

In addition, USA added screening and the partial lockdown as an extra control measure. While, in Canada, containment and mitigation measures in COVID-19 transmission control were self-isolation, social distance, movement restriction/travel, and prohibition of mass gathering (Public Health Agency Canada, 2020a; Public Health Agency Canada, 2020b). In Brazil, containment and mitigation measures in COVID-19 transmission control were self-isolation, movement restriction/travel, partial lockdown and prohibition of mass gathering (Albuquerque, 2020) (Table 1).

Table 1. Summaries of the COVID-19 Containment and Mitigation Measures from the Affected Countries

Reference Number	Author(s)/ Year	Country	Type of Publication (Journal/Bulletin/report/ press statement)	Type of containment/mitigation (√)						Date of first case occurred	Cases at 31 March 2020	Fatality at 31 March 2020	Source of data
				containment		mitigation							
				Self isolation	screening	Social distance	Movement restriction/travel	Partial lockdown/ Eg: Sch closed	Prohibition of Mass gathering				
WESTERN PACIFIC and SOUTH EAST ASIA REGION													
14	Power J 14 March 2020	Report	Korea	√	√		√			20 Jan 2020	9786	162	https://www.scmp.com/week-asia/health-environment/article/3075164/south-koreas-coronavirus-response-opposite-china-and
15	Wikipedia 16 March 2020.	Report	Japan		√		√			3 Jan 2020	1953	56	https://en.wikipedia.org/wiki/2020_coronavirus_pandemic_in_Japan
16	Pung,R, et al 16 March 2020	Journal	Singapore	√	√		√		√	23 Jan 2020	879	3	https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)30528-6/fulltext
17	Lee VJ, et al 13 March 2020	Journal	Singapore	√	√		√		√	23 Jan 2020	879	3	https://www.ncbi.nlm.nih.gov/pubmed/32167146
18	Wong JEL 20 February 2020	Journal	Singapore	√	√		√		√	23 Jan 2020	879	3	https://jamanetwork.com/journals/jama/fullarticle/2761890
19	Communicable Diseases Network. 19 March 2020	Report	Australia	√	√	√	√		√	12 Jan 2020	4359	18	https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200331-sitrep-71-COVID-19.pdf?sfvrsn=4360e92b_8
20	Cowling BJ 16 March 2020	Journal	Hong Kong	√	√	√	√	√	√	23 Jan 2020	714	2	https://www.thelancet.com/journals/lanpub/article/PIIS2468-2667(20)30090-6/fulltext
21	Duddu P 31 March 2020	Report	Philippines	√	√	√	√	√	√	20 Jan 2020	1546	78	https://www.pharmaceutical-technology.com/features/coronavirus-affected-countries-philippines-measures-impact-tourism-economy/
EUROPEAN REGION													
22	Aleta A et al 6 March 2020	Journal	Spain	√		√	√	√		31 Jan 2020	85195	7340	https://www.medrxiv.org/content/10.1101/2020.03.01.20029801v2
23	Sibylle BS et al 13 February 2020	Journal	France	√	√					24 Jan 2020	43,977	3017	https://www.eurosurveillance.org/content/10.2807/1560-7917.ES.2020.25.6.2000094
24	Mohammad SR et al 6 March 2020	Journal	United Kingdom	√	√					31 Jan 2020	22,145	1408	https://www.bmj.com/content/368/bmj.m800
25	Moss P et al 27 February 2020	Journal	United kingdom	√						27 Jan 2020	22,145	1408	https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)30463-3/fulltext
26	Flear M et al 18 March 2020	Journal	United kingdom	√	/		√		√	27 Jan 2020	22,145	1408	https://www.ncbi.nlm.nih.gov/pubmed/32005657
27	Wikipedia 30 January 2020	Report	Germany	√		√	√	-	√	27 Jan 2020	61,913	583	https://en.wikipedia.org/wiki/2020_coronavirus_pandemic_in_Germany
28	Joachim GF et al 18 March 2020	Report	Switzerland	√		√	√	√	√	25 Feb 2020	15,412	295	https://www.bakermckenzie.com/en/insight/publications/2020/03/switzerland-declares-state-of-emergency-covid19
29	The Federal Council 16 March 2020	press statement	Switzerland	√		√	√	√	√	25 Feb 2020	15,412	295	https://www.admin.ch/gov/en/start/documentation/media-releases.msg-id-78454.html
30	Salathe M et al 19 March 2020	Journal	Switzerland		√	√				25 Feb 2020	15,412	295	https://doi.org/10.4414/smw.2020.20225

31	Government of The Netherlands. 12 March 2020	Press Statement	Netherlands	√		√	√	√	√	27 Feb 2020	11,750	864	file:///C:/Users/limkk/Documents/COVID_SR_03042020/R31_New%20measures%20to%20stop%20spread%20of%20coronavirus%20in%20the%20Netherlands%20_%20News_NETHERLAND.html
32	Christina A et al 28 March 2020	Press Statement	Sweden	√			√	√	√	31 Jan 2020	4028	146	https://www.nytimes.com/2020/03/28/world/europe/sweden-coronavirus.html
33	Nikel D 30 March 2020	Press statement	Norway	√	√	√	√	√	√	26 Feb 2020	4226	26	https://www.lifeinnorway.net/coronavirus-in-norway/
34	Neghaiwi BH 15 March 2020	Press Statement	Austria	√		√	√	√	√	25 Feb 2020	9618	108	file:///F:/R17_Austria%20Announces%20Major%20Restrictions%20on%20Movement%20Over%20Coronavirus.html
35	Federal Government 27 March 2020	press statement	Belgium	√		√	√	√	√	4 Feb 2020	11,899	513	https://www.belgium.be/en/news/2020/coronavirus_reinforced_measures
36	Brzozowski A 17 March 2020	press statement	Belgium	√		√	√	√	√	4 Feb 2020	11,899	513	https://www.euractiv.com/section/coronavirus/news/belgium-enters-partial lockdown-over-coronavirus-crisis-until-5-april/
37	Andrea De Giorgio 27 March 2020	Journal	Italy	√	√	√	√	√	√	31 Jan 2020	101,739	11,591	https://en.wikipedia.org/wiki/2020_coronavirus_pandemic_in_Italy
EASTERN MEDITERANEAN REGION													
38	Gardaworld 26 March 2020	press statement	Bahrain	√		√	√		√	12 Jan 2020	515	4	https://en.wikipedia.org/wiki/2020_coronavirus_pandemic_in_Bahrain
REGION OF THE AMERICAS													
39	Peak CM et al 8 March 2020	Journal	USA	√		√		√		20 Jan 2020	140,640	2398	https://en.wikipedia.org/wiki/2020_coronavirus_pandemic_in_the_United_States
40	Berger ZD et al 20 March 2020	Journal	USA		√	√	√	√	√	20 Jan 2020	140,640	2398	https://www.bmj.com/content/368/bmj.m1141
41	Liu P 20 March 2020	Journal	USA			√	√	√	√	20 Feb 2020	140,640	2398	https://www.medrxiv.org/content/10.1101/2020.03.17.20037770v1
42	Public Health Agency of Canada 20 March 2020	Report	Canada	√						25 Jan 2020	6317	66	https://www.canada.ca/content/dam/phac-aspc/documents/services/publications/diseases-conditions/COVID-19/COVID-19-be-prepared-factsheet-eng.pdf
43	Public Health Agency of Canada 23 March 2020	Journal	Canada	√		√	√		√	25 Jan 2020	6317	66	https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/latest-travel-health-advice.html
44	Flavia Albuquerque 30 March 2020	Press statement	Brazil	√			√	√	√	25 Feb 2020	4256	136	file:///C:/Users/limkk/Documents/COVID_SR_03042020/R44_Brazil%20reports%20first%20death%20from%20Covid%20_%20Agência%20Brasil_BRAZIL.html

After more than one month of the containment and mitigation control measures taken, most of the countries managed to reduce the COVID-19 cases from spreading in the communities (WHO, 2019a). The five most successful countries that managed to control this pandemic were Hong Kong, followed by South Korea, Australia, Austria and Switzerland. Meanwhile, The USA, Brazil, United Kingdom, Singapore and Philippines are the countries still unable to significantly reduce the cases although the control measures had been implemented in the countries since the detection of first case of COVID-19 in their countries (WHO, 2019a) (Table 2).

Table 2. New Daily Reported of COVID-19 Confirmed Cases, by Date

	Country	Frequency (n)									
		March					May				
		27	28	29	30	31	1	2	3	4	5
1	South Korea	91	146	105	78	125	9	6	13	8	3
2	Japan	96	112	194	173	87	193	264	294	218	174
3	Australia	186	650	331	0	393	16	5	16	18	24
4	Philippines	71	96	272	343	128	276	284	156	295	262
5	Singapore	52	49	70	42	35	528	932	447	657	573
6	Hong Kong	65	64	59	41	32	2	0	0	1	0
7	Spain	8578	7871	8189	6549	6398	518	1781	1366	884	545
8	France	3866	3756	4603	2497	4335	1055	601	736	250	534
9	Germany	5780	6294	3965	4751	4615	0	2584	793	679	685
10	Switzerland	1000	1390	1048	1122	1138	179	119	112	88	76
11	United Kingdom	2129	2885	2546	2433	2619	6032	6201	4806	4339	3985
12	Netherlands	1019	1172	1159	1104	884	514	475	445	335	199
13	Sweden	296	240	401	253	328	790	428	562	235	404
14	Norway	240	425	264	257	124	43	49	0	50	38
15	Italy	6153	5959	5974	5217	4050	1872	1965	1900	1389	1221
16	Austria	1141	668	594	522	805	93	74	27	39	24
17	Belgium	1298	1049	1850	1702	1063	660	513	485	389	361
18	Bahrain	39	15	3	39	0	119	130	114	72	177
19	USA	4764	16,894	18,093	19,332	17,987	31,379	31,774	26,753	31,839	29,266
20	Canada	146	463	739	898	662	1693	1601	1915	3681	479
21	Brazil	0	482	502	487	352	6276	7218	6209	4970	4588

Source: Coronavirus Disease (COVID-19) Situation Reports

3.2 Discussion

This study investigated the effectiveness of different containment and mitigation control measures of COVID-19 from 21 affected countries. To the best of our knowledge, this is the first scoping review reporting types of containment and mitigation measures to control the current pandemic of COVID-19. All the affected countries highlighted in this article have already implemented community containment and mitigation measures. If these measures were executed effectively, it may prevent the transmission of the cases in the communities and hence flattening the pandemic (Anderson et al., 2020). However, this scoping review results revealed that only a

few countries managed to significantly reduce the cases whereas other countries could not show a clear impact or even no effect on reducing the confirmed cases (WHO, 2019a). Hong Kong and South Korea have successfully fought COVID-19 by effectively adopting containment and mitigation measures (Power, 2020; Duddu, 2020). While, Brazil and USA are the two countries still struggling to contain the epidemic (Peak, 2020; Berger, 2020; Liu, 2020; Albuquerque, 2020; Modeste et al., 2020).

In Hong Kong, the country's first case was confirmed on 23 January 2020 (WHO, 2019b) leading the government to declare the viral epidemic two days after the first cases was detected (Duddu, 2020). The government quickly implemented the containment and mitigation measures such as partially lockdown of amusement parks, leisure/cultural facilities, schools, and universities (Duddu, 2020; Kin-Wa, 2020). The screening was conducted among the people crossing the border and the surveillance was done within the city. Close contacts of infected people were tracked down, and quarantine centers were identified to ensure self-isolation of suspected cases.

Visitors coming from infected countries were required to undergo a compulsory 14 days of quarantine and wear a tracking band and practicing some degree of social distancing (Duddu, 2020; Sataline, 2020). A current survey found that majority of respondents (85%) avoided crowded places. While, almost all of them (100%) used face masks when leaving home and adhered firmly to the government advisories on social distancing norms (Gupta, 2020). As a result, the social distancing effort, isolating ill people at home, tracking and quarantine those exposed to the sick, closing schools, work-at-home measures, closing public meeting places seems to have trimmed the illness' rampage among the population in Hong Kong (Duddu, 2020; Sataline, 2020; Gupta, 2020).

In South Korea, the confirmed cases among the members of the religious organization in Daegu has triggering a drastic escalation of cases in the country (Power, 2020; Wikipedia, 2020c). No cities were under lockdown but several measures were taken by the government to control the spreading the disease such as imposed travel restrictions to and from South Korea, extensive screening with confirmed cases being hospitalized at the COVID-19 special facilities. While, those without symptoms are required to self-quarantined for 14 days (Power, 2020).

The cases phones and credit card data are used to trace their prior movements and find their contacts (Wikipedia, 2020c). Furthermore, populations are encouraged to wear masks, wash their hands, avoid crowds, always work remotely and practice social distancing to prevent further infection (Ahn, 2020). The government focuses on extensive screening for the disease and used technology for promptly tracking and isolation of infected people resulted the cases have dropped sharply in South Korea (Normile, 2020).

In Brazil, the government has implemented containment and mitigation strategies to slow the transmission of COVID-19 by restricting social contacts, self-isolation, partial lockdown of non-essential facilities, movement restriction and prohibition of gathering in several municipalities[52]. Although the government has launched the control measures aggressively. The numbers of COVID-19 cases still increase exponentially and it is believed that the actual numbers of confirmed cases are far higher than government official figure as the government is only screening people who end up in the hospital (WHO, 2019b).

A larger reduction of the confirmed cases can be achieved if the federal government, states, municipalities, and the population strictly followed the instructions of interventions related to social contacts, behavioral changes, improvement on public health and health care system (Requia et al., 2020). In addition, the impact of the spread of the COVID-19 can be further reduced if the country's started intensive screening capacity on its population (Watson, 2020).

The first COVID-19 case in the USA was confirmed on 20 January 2020 and the government declared a public health emergency on 31 January 2020 (Liu, 2020). In response to the global outbreak, the Federal government and public health partners were implementing aggressive measures to slow and contain transmission of COVID-19 in the USA such as travel restrictions, closing of businesses/schools/universities, complete suspension of sports leagues, imposed "stay at home" quarantines on their population to stem the spread and expanding the screening (but the number of available test kits were still limited) (Wikipedia, 2020c). In addition, The Centers for Disease Control and Prevention (CDC) staff members were working with state, local, tribal, and territorial health departments and other public health authorities to assist with case identification, contact tracing, and medical management of cases (Jernigan, 2020). However, the initial government response to the pandemic was otherwise slow causing the disease to increase exponentially and by the end of March, COVID-19 cases had spread to all 50 states and became the leading country in the number of cases worldwide (Peak, 2020). Lastly, the lack of available screening has been a major setback for the USA and has prevented the country from getting ahead of the pandemic (Jernigan, 2020).

According to WHO, the issue of affected countries is no longer about epidemic prevention but about virus containment and mitigation. Slowing down the spread to manageable levels will help medical staff to provide adequate care to infected patients and maintain social order (Ren et al., 2020). Appropriate action in individual communities and countries can benefit the entire world. These approaches are used to minimize the infection rate and deaths caused by COVID-19. Everyone plays an important role for the success of the containment and mitigation strategies. The failure to take this matter seriously will result in the countries unable to successfully flattening the curve of COVID-19 (Gupta, 2020; Normile, 2020). Until a cure or vaccine is found, everyone should play their part in reducing the spread of COVID-19. The delayed in implementation control measures represents a missed opportunity to diminish further the transmission of the COVID-19 and lower compliance increases the opportunity for person-to-person transmission (Ahmed et al., 2020).

The limitations of this scoping review should be noted. First, studies written in languages other than English were excluded. Thus, we are unable to claim to have captured the full breadth of the field as the intent of scoping reviews. Second, we did not systematically assess the scientific rigor of our literature sample especially the weaknesses of the press release and report articles. Therefore, further research and systematic investigation are warranted. However, the significance of this scoping review is its potential to highlight the importance of various containment and mitigation measures used in the affected countries to control or reduce the COVID-19 cases. This scoping review has provided a broad overview of containment and mitigation measures used in COVID-19 transmission control from the affected countries which can be adopted by other countries in the management of COVID-19.

IV. Conclusion

This review revealed all countries affected by the COVID-19 had implemented multiple containment and mitigation measures to reduce the impact of the disease. Thus, making it difficult to measure the effectiveness of each individual method. A combination of multiple control measures is necessary, since this could increase the success in reducing the transmission of the COVID-19 disease. In addition, the aggressiveness of government efforts and the compliance among the population are the main factors for the effectiveness of the containment and mitigation measures implemented. Even the best prepared government may not be able to overcome this crisis without the participation of their populations. Thus, efforts should be directed at the creation of standard guidelines to improve the containment and mitigation efforts, considering the characteristics of the virus and community acceptance.

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