

STRATEGIES IN PREVENTING THE TRANSMISSION OF COVID-19 A QUARANTINE, ISOLATION, LOCKDOWN, TRACING, TESTING AND TREATMENT (3T) : LITERATURE REVIEW

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ABSTRACT

SARS -Cov-2 is the seventh member of the coronavirus family that can infect humans after the emergence of severe acute respiratory syndrome coronavirus (SARS-CoV) and Middle East respiratory syndrome coronavirus (MERS-CoV). This disease first occurred in Wuhan, a province in Hubei China. The virus is endemic throughout the world and was categorized as a pandemic by the World Health Organization (WHO). This virus can spread through direct contact, droplets due to coughing or sneezing, and even through air or airborne spreading according to the latest findings.

The purpose of this literature review was to conduct a review about the government strategy of various countries in dealing with COVID-19. The method used was a search using PubMed, Science Direct, ProQuest databases with the PICO search question development technique based on the " COVID-19" and "Pandemic" and "lockdown" keywords. The results of the literature search found five publications between the years 2010 to 2020 that provided, full text and open access, in addition the results of the literature review confirmed various efforts have been made by the governments in various countries considering the increasing number of sufferers. These could include social distancing and physical distancing, in which some countries even implemented lockdown to prevent the second waves of COVID-19, and specifically in Indonesia which implemented the large-scale social restrictions (LSSR). Based on this literature review findings.

This virus can be prevented by regular hand washing, wearing of personal protective equipment (PPE) such as masks and gloves, avoid shaking hands and staying at home.

KEYWORDS

Covid-19, Quarantine, Tracing, Literature Review

INTRODUCTION

Wuhan City, Hubei Province, China is the origin of novel coronavirus 2019 (2019-nCov) or respiratory syndrome coronavirus 2(SARS-Cov-2) [1],

Corona Virus 2 (Sars-Cov-2) it is quickly and spread evenly almost throughout the world resulting in the World Health

Organization (WHO) classifying it as a catastrophic pandemic [2]. This WHO decision is very relevant to the latest WHO data reported on November 5, 2020, which revealed that corona virus had infected 47,362,304 people and resulted in 1,211,986 deaths. In this case, the country with the highest number of patients was in the United States with 9.193.765 people and 229,948 deaths [3].

This pandemic disaster raises significant acute damage, complying with health procedures such as quarantine, contact tracing, and early isolation which are considered appropriate initial strategies in handling the virus spread [2]. Quarantine includes a restriction at homes, regions, hospitals and involves large-scale quarantines [4], while contact tracing is a process for identifying, assessing and managing people who are in close contact with confirmed/probable cases to prevent further transmission [5].

The whole world responds to the spread of this virus in various ways, however, the most appropriate strategy is currently to take early prevention by complying with health protocols and following government recommendations [6]. The virus is spread by droplets when sneezing or coughing and enters through the eyes, nose, mouth, and saliva [7]. Each individual should have the recommended personal protective equipment (PPE) because it is valuable in protecting against viral infections [8]. The findings in the field discovered many evidence issues that triggered the spread of the virus in health facilities due to non-compliance with the health officer's direction in wearing PPE properly and poor hand hygiene [9].

RESEARCH METHOD

The method used in the current research was a literature review, where the research articles were filtered based on inclusion and exclusion criteria and displayed in a flow diagram. In this study, the Inclusion criteria included the

articles that were published in the last two years, which is from 2019 to 2020, written in English, original research and full text. Exclusion criteria were for article and those who have double publication, example published in these two databases.

The literature search used multiple databases including PubMed, Science Direct, and ProQuest. In the case of searching in PubMed database, the used keywords were COVID-19 [MeSH] and quarantine [MeSH] or Isolation [MeSH] and tracing [MeSH] and testing [MeSH] and treatment by filtering the articles that were published in the last five years and in full text form, which resulted in 3,006 articles from this database. Meanwhile, searching in the ScienceDirect database used keywords of COVID-19 and isolation or quarantine and tracing or testing and treatment by filtering the articles which were published in the last five years, resulted in 216 articles. Furthermore, searching using the ProQuest database used keywords COVID-19 and isolation or quarantine and tracing or testing and treatment, discovered 219,093 articles. Based on this search strategy, 222.315 articles were found from all databases. The search results of the articles were filtered according to the inclusion and exclusion criteria, had full text format, open access publication, eligible, finally five articles were obtained for review.

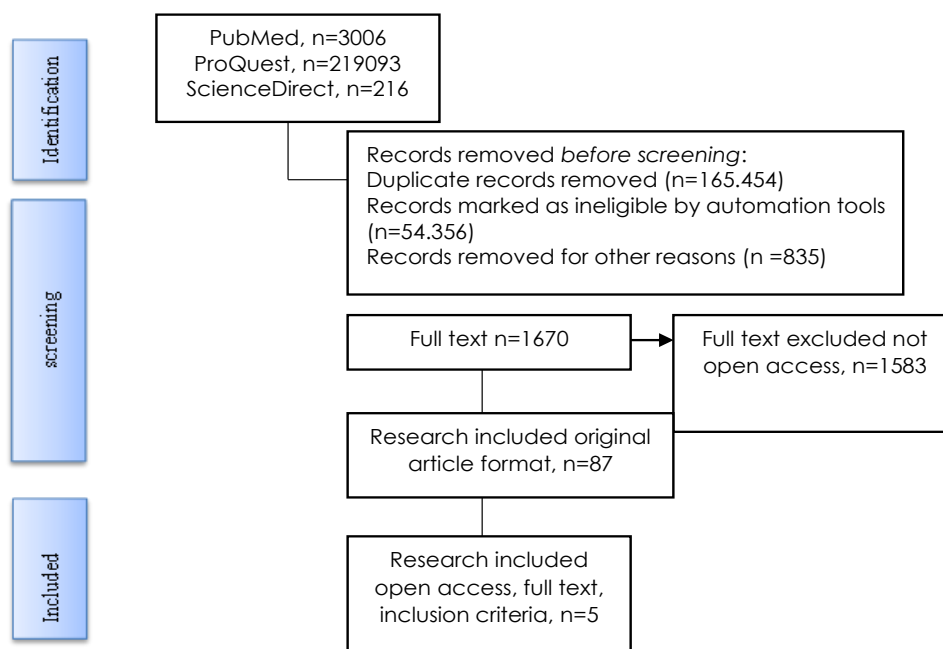
Records removed before screening:

Duplicate records removed (n=165.454)

Records marked as ineligible by automation tools (n=54.356)

Records removed for other reasons (n =835)

FIGURE 1. FLOWCHART PRISMA DIAGRAM



Author	Title	Methods	The Population	Result and Conclusion
Hallewell, [10]	Feasibility of controlling COVID-19 outbreaks by isolation of cases and contacts	Stochastic transmission model for tracing contacts and cases and model structure	people with case isolation	isolation cannot control the spread of the virus for a long time, isolation can be applied if the number of cases is small
Verma, [11]	Global lockdown: An effective safeguard in responding to the threat of COVID-19	Bayesian inference techniques were used to observe and observe changes in the 6 countries with the largest case infection	6 countries with most cases (American, Italian, English, French, India and Russia)	To control the spread of COVID-19, like other national and international laws, lockdowns must be implemented and enforced. It is recommended that the implementation of a timely or adequate lockdown is a step towards social distancing and to control the spread of this pandemic.
Meo, [12]	Impact of lockdown on COVID-19 prevalence and mortality during 2020 pandemic: observational analysis of 27 country	Random sampling method from different continents	27 countries in the world	The findings showed that 15 days after the lockdown there is a trend of decline, but there was no significant decrease
Purnama & Susanna [13]	Attitude to COVID-19 Prevention With Large-Scale Social Restrictions (PSBB) in Indonesia: Partial Least Squares Structural Equation Modelling	cross-sectional research using partial least squares and structural equation model (PLS-SEM)	856 respondents	more than 50% showed the attitude due to PSBB dependent on benefits, as well as related threats covid-19 and then the community needs to support these policies by wearing a mask, keeping a safe distance and staying at home
Park [14]	Application of Testing-Tracing Treatment Strategy in Response to the COVID-19 Outbreak in Seoul, Korea	Descriptive and explanatory analysis	637 Respondents	3T effectively flattens the curve so that it drops the R value below 1 in Seoul

RESULTS AND DISCUSSIONS

Based on the literature search results five articles were obtained accordance with the inclusion and exclusion criteria for this study.

Hallewell's research [10] revealed that contact tracing and isolation of cases could be alternatives in preventing the

spread of the virus. In addition, the findings of the researchers concluded that case isolation could not be for three months, so that the reduction of the cases could be significant if isolation and tracing were carried out effectively [10].

Another research work was conducted in six countries, including America, Russia, England, France, Italy, and India,

this research illustrates lockdown effectiveness in these countries, but in general, this work suggested that the government should consider implementing lockdown to be effectively in order to reduce the spread of the virus. In this case timely implementation of lockdown will make a positive contribution to outbreak control [11].

Another research was also carried out by Meo [12], revealing the effectiveness of reducing cases after 15 days after the lockdown, however, it specifically it also found other facts that mortality after 15 days of lockdown does not show a positive trend [12]. Furthermore, research was also conducted in Indonesia involving 868 respondents, this research determined the effective implementation of PSBB / Large-Scale Social Restriction, this policy can reduce the risk of COVID-19 spread, yet community involvement through improved disciplinary health protocols is critical as well [13].

Korea implemented preventive measures such as testing, tracing, and treatment (3T), in another study, based on the study, it was that 3T technique in the first 100 days of the initial wave of the pandemic in effective as seen from the decrease of R Value (t) curve below 1 in Seoul [14].

ISOLATION

Isolation is the implementation of healthcare delivery in preventing infectious diseases between groups and individuals [15]. Isolation in practice separates sick people from healthy or not infected people with a virus [16]. The isolation process could be conducted in a hospital by applying negative pressure. Self-isolation or isolation undertaken with family is proven to reduce the spread of the virus [17]. However, Smith's research denied this, stating that isolation was not optimal for infectious diseases because in asymptomatic cases or pre-infection symptoms were confirmed to cause transmission as well [(18)]. Hallewell also supports this research, stating that isolation and contact tracing cannot be applied to prevent transmission of the virus, but it is recommended and effective only at the beginning of the control scenario. This research introduces other strategies in dealing with virus dissemination in the long run [10]. The negative impact of isolation on mental health has worsened the situation. Hossain's research has reviewed several scientific articles and found that isolation has led to psychological distress, stress, stigmatization, low self-esteem, and other mental disorders. [19].

LOCKDOWN AND QUARANTINE

Most countries have chosen to implement lockdown policies in preventing the uncontrolled spread of the virus COVID-19 virus. The first implementation of lockdown was in Hubei, China, around January 2020. It is a case management strategy for COVID-19. Lockdown has impacted the travel restrictions for all Hubei citizens, the cancellation of the meeting, and the closing of public places such as schools and universities [20]. Lockdown is also enforced in some countries including India, Russia, France, Italy, and the UK. Lockdown policy in these five countries has had a positive impact in reducing the spread rate of the virus, in contrast with the United States that did not implement it [11]. Other studies reinforce these findings from 27 countries that experienced a decline in the average prevalence of mortality in a last 15-day period compared to the 15 days before the lockdown [12]. Lockdown is considered a good strategy reducing contact by 81% and the rate of the spread of this virus. The research work of Domenico's [20] warned a second wave would occur if the lockdown status were revoked [21]. Besides reducing the spread of disease, lockdown led to a decrease in air pollution. Lian's research results showed air quality in Hubei and Wuhan increased after lockdown [22]. This research result is supported by Singh and Chahan in India that lockdown also resulted in better India's air quality to be better [23].

TERRITORIAL QUARANTINE

Territorial quarantine is almost the same as lockdown, but quarantine only covers a narrower area. Barbara Streit's research concluded quarantine is more cost-effective in preventing the spread of the virus if it is done quickly at the beginning of deployment [24]. Especially in Indonesia that implemented a Large-Scale Social Restriction (PSBB) policy, where the PSBB policy was devolved in April 2020. PSBB in Indonesia proved to be effective in suppressing the transmission of the R-value from 2.2 to 1.2 in April to June 2020 [25]. PSBB requires the active involvement of the public to stay at home. Generally, PSBB can reduce contact but may harm some traders and construction workers who lost income and thus impacted their economies. PSBB also has an impact on the mental health conditions, including the incidence of anxiety, depression (16-28%), and stress (8%) [26]. PSBB success rate is very dependent on the community's behaviour in staying at home, keep a safe distance from others, and always wearing a mask [13].

Lockdown and territorial quarantine are obligation and moral burden that must be carried out by residents of states, in addition government must also prepare to meet mandatory basic needs of citizens affected by the quarantine [27].

TESTING, TRACING AND TREATMENT

Testing, Tracing and Treatment (3T) are also strategies to control the spread of the virus that have been tested in Korea by implementing the strategy of preventive testing and also in the provisions of a call center for the prevention of transmission of COVID-19. The results further showed a flat curve of the transmission case [14]. When prevention of the virus is approached simply by testing, it will not be efficient because it is only part of the strategy. Hence, The World Health Organization (WHO) highly recommends a combination of 3T [28]. It combines isolation of cases, tracing, and more effectively reduces the spread compared to only perform self-isolation [29].

Tracking systems-based applications has been developed. Altman's research even found that tracing in the application form showed to reduce and press the number of spread of the virus [30][31].

CONCLUSION

Transmission of COVID-19 can be prevented through territorial quarantine, and lockdown which have been proven to reduce the spread of this virus but must be done promptly. Indonesia carried out PSBB. A policy is similar to territorial quarantine, but on a large scale. This policy also can reduce the spread of the virus.

Government policies related to the quarantine area and 3T should receive maximum support from the community as an objective and participants who are involvement in complying with a government's protocols and appeals that affect the success of countermeasures of COVID-19virus.

This research can be used as an early step in the future to significantly reduce the spread of the disease and it is best if original research is needed to test the reliability of these reported treatments.

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