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Novel Coronavirus (COVID-19) & effect of quarantine

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Abstract
Introduction: Coronavirus disease (COVID-19) is an infectious disease caused by severe acute respiratory syndrome coronavirus 2 **(**SARS-CoV-2**)**, previously known as 2019 novel coronavirus **(**2019-nCoV**)**, a species of coronavirus. The study suggested that elderly people, particularly those older than 80 years, and people with co-morbidities, such as cardiac disease, respiratory disease, and diabetes, are at greatest risk of serious disease and death.
Objective: To identify the effectiveness of quarantine during corona virus.
Methods: A comprehensive review of published literature and journal articles from electronic databases was done by following specific search strategy for each database. Initial 3610 titles were retrieved and after screening 9 articles were selected for full test screening. Finally, 9 articles were selected based on the inclusion criteria.
Result: The research studies highlighted that the countries in which rapid government interventions and strict public health measures for quarantine and isolation were implemented were successful in halting the spread of infection and prevent it from exploding as well as it also showed that quarantine exhibited a high prevalence of psychological distress. Symptoms of posttraumatic stress disorder (PTSD) and depression.
Conclusion: The study concluded that lockdown will significantly slow the spread of COVID-19 hospitalizations and moderate infections compared to a lack of interventions.

Keywords: Coronavirus disease, Quarantine

Introduction

Coronavirus disease (COVID-19) is an infectious disease caused by severe acute respiratory syndrome coronavirus 2 **(**SARS-CoV-2**)**, previously known as 2019 novel coronavirus **(**2019-nCoV**)**, a species of coronavirus. Most people infected with the COVID-19 virus will experience mild to moderate respiratory illness and recover without requiring special treatment. Older people and those with underlying medical problems like cardiovascular disease, diabetes, chronic respiratory disease, and cancer are more likely to develop serious illness [1].

A comprehensive report published by the Chinese Center for Disease Control and Prevention on the epidemiological characteristics of 72 314 patients with COVID-19 confirmed previous understanding that most known infections cause mild disease, with a case fatality ratio that ranged from 2·9% in Hubei province to 0·4% in the other Chinese provinces. This report also suggested that elderly people, particularly those older than 80 years, and people with comorbidities, such as cardiac disease, respiratory disease, and diabetes, are at greatest risk of serious disease and death [1].

On 29 December 2019, the first four cases of an acute respiratory syndrome of unknown etiology among people linked to a seafood market ("wet market") were reported in Wuhan city, Hubei province, China. Research is underway to understand more about transmissibility, severity, and other features associated with 2019-nCoV. It appeared most of the early cases had contact history with the original seafood market. Soon, the secondary source of infection was found to be human-to-human transmission among close contacts. There was an increase of infected people with no history of exposure to wildlife or visiting Wuhan, and multiple cases of infection were detected among medical professions. The 2019-nCoV infection occurs through exposure to the virus, and both the immunosuppressed and normal population appear susceptible [2].

Bats are considered to be the natural hosts of SARS-CoV-2, while pangolins and snakes are thought to be the intermediate hosts. Studies of Institute Pasteur of Shanghai showed that bats might be the natural hosts of SARS-CoV-2. Furthermore, studies of Peking University suggest that SARS-CoV-2 infection is probably caused by snakes. However, later studies found that no evidence showed that snakes are the hosts of SARS-CoV-2. Study from Wuhan institute of virology showed that the similarity of gene sequence between SARS-CoV-2 and bat coronavirus is as high as 96.2% by sequencing technology. This also implied that bats are the possible source of SARS-CoV-2. At present, it is considered that the main infectious source of sars-cov-2 is COVID-19 patients in the population. However, there is still a debate about whether SARS-CoV-2 patients in the incubation period are infectious, which needs further study [3].

Quarantine is the separation and restriction of movement of people who have potentially been exposed to a contagious disease to ascertain if they become unwell, so reducing the risk of them infecting others. This definition differs from isolation, which is the separation of people who have been diagnosed with a contagious disease from people who are not sick; however, the two terms are often used interchangeably, especially in communication with the public. The word quarantine was first used in Venice, Italy in 1127 with regards to leprosy and was widely used in

response to the Black Death, although it was not until 300 years later that the UK properly began to impose quarantine in response to plague. Most recently, quarantine has been used in the coronavirus disease 2019 (COVID-19) outbreak [13].

All over the world, public health measures are in place with the aim of reducing the spread of COVID-19, a new virus that spreads quickly and for which there is not yet an effective treatment or vaccine. These measures include physical distancing (also called social distancing), isolation and quarantine. Quarantine is the separation and restriction of movement of people who have potentially been exposed to a contagious disease, in order to limit its spread. It can be applied to individuals or whole communities. It can be voluntary or enforced.

Data Extraction Table

Table 1

SN	Author	Title	COUNTRY	FINDINGS
1	Raj Dandekar, George Barbastathis	Quantifying the effect of quarantine control in Covid-19 infectious spread using machine learning	USA	Leveraging the neural network augmented model, the analysis was focused on four locales: Wuhan, Italy, South Korea and the United States of America, and compare the role played by the quarantine and isolation measures in each of these countries in controlling the effective reproduction number R_t of the virus. The results unequivocally indicate that the countries in which rapid government interventions and strict public health measures for quarantine and isolation were implemented were successful in halting the spread of infection and prevent it from exploding exponentially.
2	Dr Elke Van Hoof	Lockdown is the world's biggest psychological experiment	Dutch	In late February 2020, right before European countries mandated various forms of lockdowns, 24 studies showed the psychological impact of quarantine (the “restriction of movement of people who have potentially been exposed to a contagious disease”). The findings offer a glimpse of what is brewing in hundreds of millions of households around the world. In short, and perhaps unsurprisingly, people who are quarantined are very likely to develop a wide range of symptoms of psychological stress and disorder, including low mood, insomnia, stress, anxiety, anger, irritability, emotional exhaustion, depression and post-traumatic stress symptoms. Low mood and irritability specifically stand out as being very common, the study notes.
3	Samantha K Brooks, Rebecca K Webster, Louise E Smith, Lisa Woodland, Simon Wessely, Neil Greenberg, Gideon James Rubin	The psychological impact of quarantine and how to reduce it	London	Most reviewed studies reported negative psychological effects including post-traumatic stress symptoms, confusion, and anger. Stressors included longer quarantine duration, infection fears, frustration, boredom, inadequate supplies, inadequate information, financial loss, and stigma. Some researchers have suggested long-lasting effects. In such situations where quarantine is deemed necessary, officials should quarantine individuals for no longer than required, provide clear rationale for quarantine and information about protocols, and ensure sufficient supplies are provided. Appeal to altruism by reminding the public about the benefits of quarantine to wider society can be favorable. results suggest that officials should take every measure to ensure that this experience is as tolerable as possible for people. This can be achieved by: telling people what is happening and why, explaining how long it will continue, providing meaningful activities for them to do while in quarantine, providing clear communication, ensuring basic supplies (such as food, water, and medical supplies) are available, and reinforcing the sense of altruism that people should, rightly, be feeling.
4	Laura Hawryluck, Wayne L. Gold, Susan	SARS Control and	Canada	As a transmissible infectious disease, severe acute

	Robinson, Stephen Pogorski, Sandro Galea and Rima Styra	Psychological Effects of Quarantine, Toronto, Canada		respiratory syndrome (SARS) was successfully contained globally by instituting widespread quarantine measures. Although these measures were successful in terminating, the adverse effects of quarantine have not previously been determined in a systematic manner. The 129 quarantined persons who responded to a Web-based survey exhibited a high prevalence of psychological distress. Symptoms of posttraumatic stress disorder (PTSD) and depression were observed in 28.9% and 31.2% of respondents, respectively. Longer durations of quarantine were associated with an increased prevalence of PTSD symptoms.
5	Dr. Myles Faith, Dr. Nicole Fearnbach, Dr. Steven B Heymsfield	Effect of COVID-19 Lockdown on lifestyle behavior in children with obesity living in Verona, Italy	Italy	The study strongly supports that the COVID -19 pandemic will exacerbate all of the risk factor for weight gain associated with the summer recess. Specially, longitudinal study of children and adolescents with obesity affirmed that eating, activity and sleep behavior changed in an unfavorable direction three weeks into their confinement during the national lockdown. These observation point to the critical need for implementation of preventive measure during periods of lockdown, particularly when their duration is uncertain. Such measures might include implementation of telemedicine lifestyle programs, practitioners of pediatric and adolescent medicine can offer supplemental guidance encouraging families to maintain healthy lifestyle choices and facilities can be designed for implementing exercise programs that minimize viral transmission. Children and adolescents struggling environment for maintaining healthy lifestyle behaviors. Depending on duration, these untoward lockdown effect may have a lasting impact on a child's or adolescent's adult adiposity level.
6	Alexandre Medeiros de Figueiredo, Antonio Daponte Codina, Daniela Cristina Moreira Marculino Figueiredo, Marc Saez, and Andrés Cabrera León	Impact of lockdown on COVID-19 incidence and mortality in China: an interrupted time series study.	China	An interrupted time series study was conducted to evaluate the effectiveness of lockdown on reducing the number of cases and deaths from COVID-19. Strict social distancing measures were effective in reducing incidence and mortality rates. The results demonstrate that the lockdown was effective in reducing incidence and mortality rates in Hubei and in adjacent regions like Guangdong. Thus, it can be used as a strategy to reduce the spread of the COVID-19 epidemic. Our results suggest that the onset of reduction effects on incidence and mortality are observed after a period ranging from 7 to 17 days and 10 days, respectively m. Effectiveness and the time required for changes seem to be associated with the number of undiagnosed patients and post-lockdown home transmission.
7	Emily Schueller, Eili Klein, Katie Tseng, Geetanjali Kapoor, Jyoti Joshi, Aditi Sriram, Arindam Nandi, Ramanan Laxminarayan	COVID-19 in India: Potential Impact of the Lockdown and Other Longer-Term Policies	India	The study found that India's current lockdown will significantly slow the spread of COVID-19 hospitalizations and moderate infections compared to a lack of interventions. The temporary lockdown will buy time for health systems to prepare for the peak of the outbreak by building temporary healthcare facilities and obtaining additional personnel, hospital beds, and equipment. It is vital to build up healthcare infrastructure quickly to prepare for an increase in hospitalized cases. In addition to providing shelter and care for the sick, such an investment may provide a livelihood for workers and reduce the negative impacts of restrictions. The long-term interventions including a 25 percent and 50 percent quarantine of symptomatic cases would further delay and reduce the peak of COVID-19 infections and

				hospitalizations in India. While the potential impact of an individual policy is unknown, it is clear that a longer-term policy of reducing social contacts can have a large effect.
8	Sirgrid Wertheim- Heck	The impact of the COVID-19 lockdown on the diets of Hanoi's urban poor	Vietnam	The COVID-19 pandemic is driving governments to enforce major restrictions on the lives of citizens. Vietnam, with nearly 100 million people, is no exception. The country was praised internationally for its rapid response in deploying strict quarantine measures during the initial outbreak of the virus. It is now facing a second wave of transmissions and a national lockdown is in place until mid-April. People are required to stay at home unless buying food and medicine. Businesses are closed, public transport is suspended and public gatherings are prohibited. In Vietnam, and indeed other countries with complex, self-organized informal vending structures, this blanket shutdown will have huge ramifications for the urban population. The urban poor in particular rely heavily on these structures for their daily necessities, most importantly affordable foods. Local markets provide more than just goods. Many Vietnamese families have shopped at their trusted local market for generations. These markets are vibrant community hubs. They form a crucial part of daily life for both consumers and vendors.
9	Biao Tang, Fan Xia, Sanyi Tang, Nicola Luigi Bragazzi, Qian Li, Xiaodan Sun, Juhua Liang, Yanni Xiao, Jianhong Wu	The effectiveness of quarantine and isolation determine the trend of the COVID-19 epidemics in the final phase of the current outbreak in China, International Journal of Infectious Diseases	China	Since January 23rd 2020, stringent measures for controlling the novel coronavirus epidemics have been gradually enforced and strengthened in mainland China. The detection and diagnosis have been improved. Results show that the trend of the epidemics mainly depends on quarantined and suspected cases. The predicted cumulative numbers of quarantined and suspected cases nearly reached static states and their inflection points have already been achieved, with the epidemics peak coming soon. Most infected cases have been quarantined or put in suspected class, which has been ignored in existing models. The uncertainty analyses revealed that the epidemics is still uncertain and it is important to continue enhancing the quarantine and isolation strategy and improving the detection rate in mainland China.

Material and Method

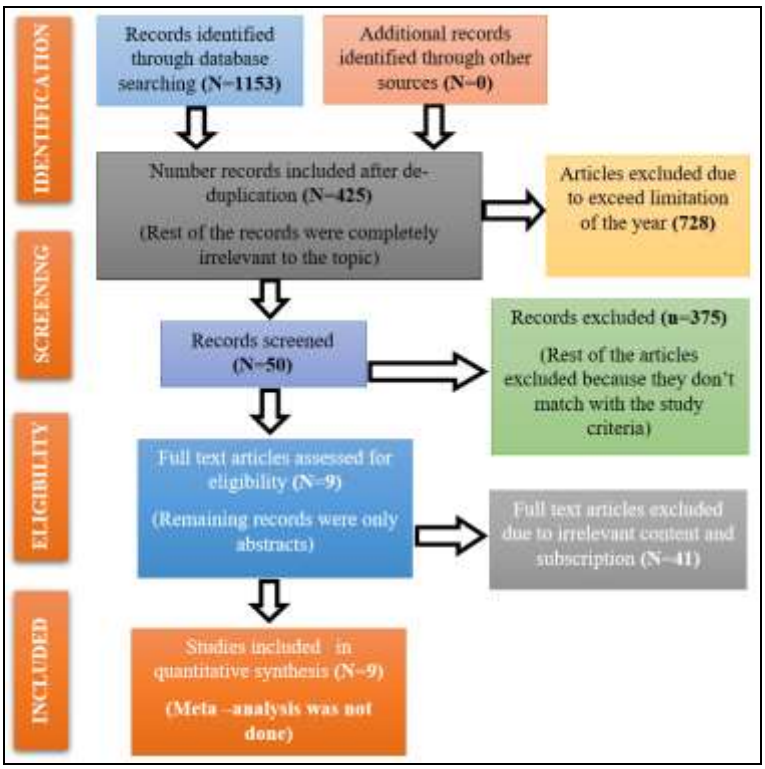

Fig 1: Prisma flow diagram of narrative review

Findings

The systematic search was conducted by formulating the terms separately and in integration with all synonyms, also according to the database. Likewise, a manual Google scholar search was undertaken using the keywords and search synonyms from already articles. An addition of 9 articles was found in the database. Initial search recovers 1153 articles over which 425 articles were selected manually. 728 articles were rejected as a result of replication in the database. Replication was removed and reviewed 9 articles for acceptability. 41 more studies were rejected because of unreachable of the full text. Hence 9 articles were screened which includes quantitative study.

Conclusions

There has been a rapid research in response to the outbreak of 2019-nCoV. During this early period, studies have been published exploring the epidemiology, causes, clinical manifestation and diagnosis, prevention and control of the novel coronavirus. Thus, most studies have focused on the epidemiology, causes, prevention and control measures. Studies providing evidence on prevention and control measures are urgently needed to minimize the impact of the outbreak. Government agencies have quickly incorporated recent scientific findings into public policies at community, regional, and national levels to slow down and/or prevent the further spread of the 2019-nCoV.

The study found that lockdown will significantly slow the spread of COVID-19 hospitalizations and moderate infections compared to a lack of interventions. The temporary lockdown will buy time for health systems to prepare for the peak of the outbreak by building temporary healthcare facilities and obtaining additional personnel, hospital beds, and equipment. It is vital to build up healthcare infrastructure quickly to prepare for an increase in hospitalized cases. In addition to providing shelter and care for the sick, such an investment may provide a livelihood for workers and reduce the negative impacts of restrictions. The long-term interventions including a 25 percent and 50 percent quarantine of symptomatic cases would further delay and reduce the peak of COVID-19 infections and hospitalizations in India.

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