



Epidemiology, Prevention and Control Strategies of Coronavirus COVID 19 in Iran: A Systematic Review

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Abstract

BACKGROUND: Following the announcement of the World Health Organization (WHO) on January 30, 2020, of coronavirus disease (COVID)-19 as a global and emergency state of international health emergency; posing a serious threat to the physical health and lives of individuals transmitted through respiratory droplets and close contact. The virus causes respiratory symptoms and damages to other organs, sometimes leading to death in case of exacerbation of symptoms.

AIM: This study was conducted through reviewing various articles related to COVID-19 disease, with the purpose of reviewing the epidemiology, prevention and control strategies of COVID-19 coronavirus in Iran.

METHODS: In the present review study, the articles indexing in the Persian and Latin databases of SID, Magiran, PubMed, Scopus, Scholar, Web of Science, Embase, MedRxiv, and WHO were examined based on MESH keywords. Finally, 38 articles, 5 protocols and reports were reviewed.

RESULTS: According to the report of the WHO on July 22, 2020, 14,765,256 people worldwide have been infected and 612,054 people have died of this virus. Moreover, in Iran, according to the WHO report, 278,827 people were infected and 14,634 people died of the virus until July 22, 2020. Respiratory droplets are the main way of transmission and it can also be transmitted through close contact. According to research, 51% of patients with chronic disease show symptoms such as fever (83%), cough (82%), shortness of breath (31%), muscle pain (11%), fatigue (9%), headache (8%), sore throat (5%), had rhinorrhea (4%), chest pain (2%), diarrhea (2%), and nausea and vomiting (1%). There is currently no specific antiviral treatment or vaccine for severe acute respiratory syndrome coronavirus 2, and clinical treatment for COVID-19 has so far been limited to prophylaxis and palliative care. Quarantine alone is not enough to prevent the spread of COVID-19. Basic health measurements to prevent the spread of the disease include frequent handwashing and the use of personal protective equipment such as masks.

CONCLUSION: Extensive research can be the key to solve the existing challenges in the prevention, control, diagnosis, and treatment of the disease. The best ways to fight the new corona disease include educating the people, providing accurate information, providing personal protective equipment, canceling meetings and emphasizing citizens homeliving and regular handwashing, observing social distancing, and finally identifying suspicious cases and quarantine.

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Introduction

On January 7, 2020, the pathogen was identified as the new coronavirus, now novel coronavirus (nCoV)-2019, or coronavirus disease (COVID-19), which is a virus distinguished from both severe acute respiratory syndrome coronavirus (SARS-CoV) and Middle East Respiratory Syndrome coronavirus (MERS-CoV) is distinct [1], [2]. With the spread of this endemic disease in China, other cases of it were observed outside of China [3]. On January 30, 2020, the World Health Organization (WHO) declared it a public health emergency a International public health emergency in the world [4]. As of July 22, 2020, 14,765,256 people

have been infected worldwide and 612,054 people have died of the virus. Furthermore, in Iran, according to the WHO report, as of July 22, 2020, 278,827 people were infected and 14,634 people died due to the virus [5].

According to current epidemiological research, the incubation period of the disease is 1–14 days (mostly 3–7 days) [6]. The virus is transmitted mainly through respiratory droplets and close contact and is observed in human respiratory epithelial cells for about 96 h, first invading the lungs and causing serous fluid, fibrin exudate, and the formation of a hyaline membrane in the alveoli. Becomes [7], which causes respiratory symptoms such as dry cough, dyspnea, fever and eventually pneumonia, acute respiratory failure, acute respiratory distress syndrome, and other multiple organ

failures [8], [9]. Furthermore, many patients with COVID-19 have gastrointestinal symptoms such as anorexia, abdominal pain, nausea and vomiting, and diarrhea even before the onset of respiratory symptoms [10]. A study found that about 40% of cases suspected of having COVID-19 had symptoms. Anorexia, 10% had diarrhea, 8% had non-specific abdominal pain, and 8% had nausea and vomiting [11].

The highest mortality and morbidity occurred in the elderly and those with underlying disease. Children and infants are also vulnerable to this disease [12], [13]. According to the National Health Commission of China, the death rate in cases confirmed in China was 2.2% as of February 4 [14], and among hospitalized patients, the mortality rate was between 11% and 15% [6] [15]. To increase the safety of patients and to prevent cross-infection in respiratory infectious patients (such as influenza, COVID-19) can be used contact precautions, air precautions, and droplet precautions [16]. However, treatments supportive drugs are mainly used because there is currently no specific effective treatment [17] and currently the main focus is on the development of new drugs, including antivirals and vaccines [18]. Most people infected with or without mild symptoms can spread the virus and transmit it to others, which is very challenging to prevent the spread of COVID-19. Therefore, strict monitoring is very important to prevent sustainable transmission [19]. In the first period, the new coronavirus, many studies were published on the epidemiology, causes, manifestations, and clinical diagnosis and prevention and control of the virus. However, studies examining prevention and control measures have gradually increased. To minimize the impact of prevalence, it is necessary to study in this field [20].

Countries such as Taiwan and Vietnam have been able to control Corona by doing some strict hygiene measures, including invasive tests, quarantine, tracking contacts with polluted environment, and border monitoring. Likewise, Korea could decrease epidemic by applying invasive tests, quarantine, accompanied by physical distant measures. On the other hand, China could control the epidemic using some strategies such as compulsory quarantine and invasive tests [21]. Moreover, the hygiene system, as well as the community of Iran, has been greatly affected by this epidemic disease [22]. Regarding the severity of the disease, the hygiene system provides some plans to deal with the disease. However, because of the extensive dimensions of the disease, there would have been so much pressure on the hygiene care systems so much that it might not be able to compensate its loss regarding its different dimensions. These dimensions include financial problems, social tension, and hygiene system not responding to the patients. Therefore, cooperation and collaboration of the society with the health system would be influential in control and preventing the disease [23].

Since coronavirus 19 is the third most dangerous pandemic virus emerged in the 21st century

and is one of the most prevalent diseases [19], [20] with high mortality and morbidity rate during the disease pandemic which has developed worldwide, although the effective vaccine to prevent it has not yet been made. In the current situation, the only logical way to control the disease and reduce its effects and mortality rate is to use ways to prevent the disease. Hence, the present study was conducted aiming at reviewing the epidemiology, prevention and control strategies relevant to coronavirus 19. Moreover, no similar systematic review study has not been conducted in Iran, this study has been done to review the epidemiology, preventive, and COVID 19 controlling strategies systematically.

Methods

The aim of this study was to review and classify the findings of Latin and Persian articles relevant to COVID-19 disease, epidemiology, symptoms, ways of control and prevention, as well as existing challenges by reviewing articles published by foreign and Iranian authors in international and local journals about COVID disease-19. In the present review study, articles indexed in Persian and Latin databases of SID Magiran, PubMed, Scopus, Scholar, Web of Science, Embase, MedRxiv, and WHO were examined. The search terms regarding the research topic, based on MESH and syntax, were: COVID-19, coronavirus, deltacoronavirus, SARS-CoV-2, MERS-CoV, SARS virus, prevention, and prevalence, prevention and control strategies. In total, throughout the present study, on the basis of the above-mentioned keywords, initially 525 articles, reports, and protocols of reputable health organizations were studied, as well as the entry and extract criteria of the articles were scrutinized. After studying the titles and abstracts of articles by the authors of the article and excluding the similar and unrelated items, the relevant items were selected as research items and 38 studies and 5 protocols and reports were reviewed based on the abstract and full text of the articles (Figure 1). Due to the widespread and increasing prevalence of the disease and the changes in the statistics related to the prevalence, the statistics presented in this study are until July 23, 2020. Criteria for selecting articles are:

1. Descriptive, analytical, interventional, and review articles published in the past 5 years.
2. Persian and English articles published in scientific research journals in and out of the country, the full texts of which were available.
3. Articles related to epidemiological studies, control strategies, and prevention of coronavirus 19.

Criteria for excluding articles were: Articles that did not have the full text, articles that did not have clear implementation methods, and articles that focused only on treating the disease rather than ways to prevent and control the disease.

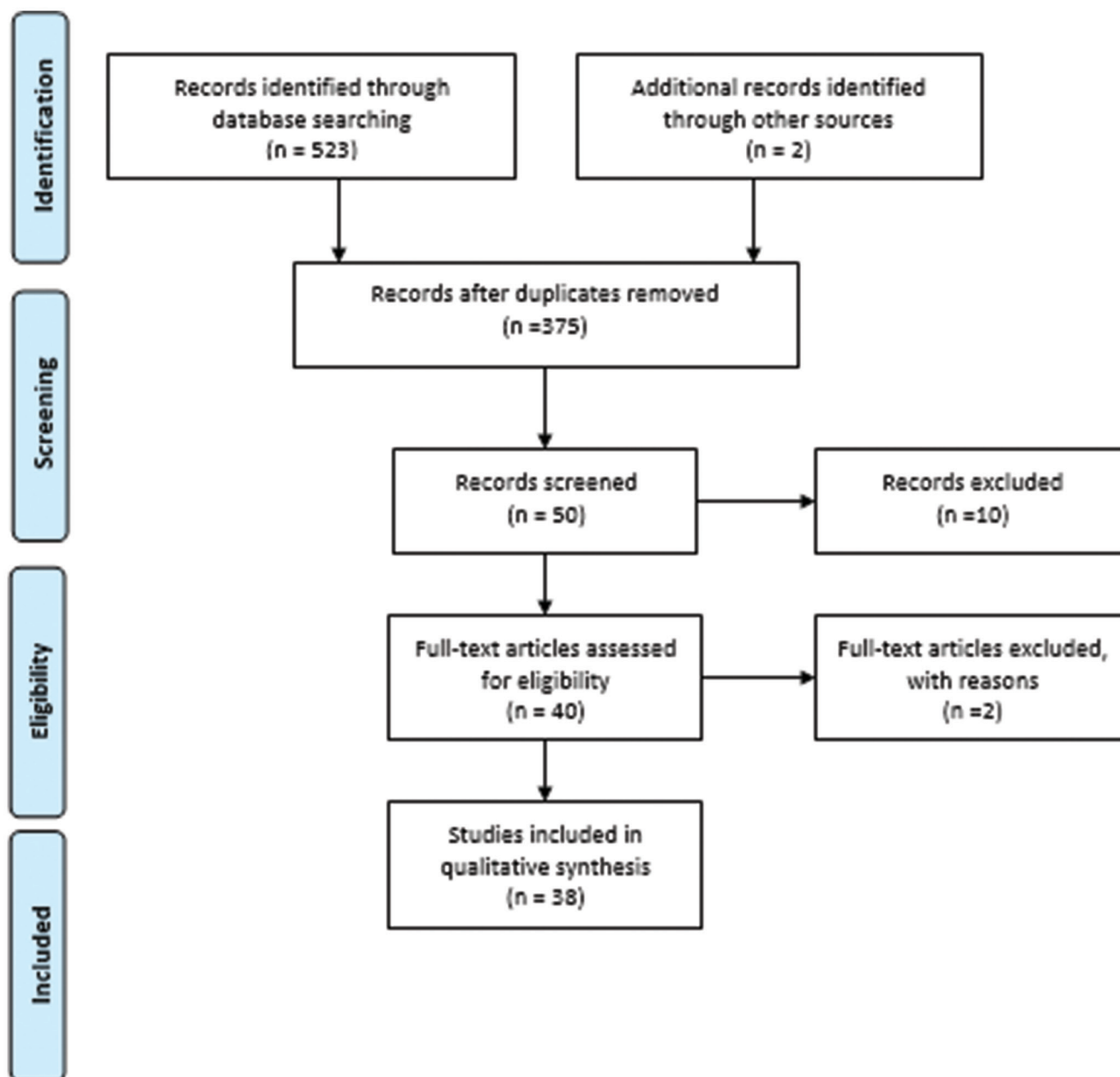


Figure 1: Flowchart for selection of studies

To investigate and analyze the papers elicited from searching databases, which were assessed and qualified according to input and output criteria determined in the methodology, four researchers participated in the research. The flowchart for the selection of studies was illustrated in Figure 1.

Results

Epidemiology

Throughout history, many infectious diseases such as HIV, Ebola, Zika, and H1N1 have been emerged [21]. In addition, the Ebola virus outbreak in

2014 and the Zika virus outbreak in 2015 both caused significant damages to countries [21]. The coronavirus is an RNA virus weighing 80–120 nm. It is divided into four types: Alpha coronavirus, beta coronavirus, gamma coronavirus, and delta coronavirus. The recombination rate of COV is high due to high transcription errors. Despite its high mutation, coronavirus has genetic pathogens that occur in humans and animals with a wide range of clinical symptoms from the asymptomatic period to the need for intensive care, infection of the respiratory, gastrointestinal, hepatic, and nervous systems [23]. Human coronavirus was neglected long before the onset of severe acute coronavirus syndrome (SARS-COV) in 2002, and in 2002, in 8096, cases with a 10% of mortality rate. Fortunately, public health measures, including isolation and quarantine, brought SARS to an end in the summer of 2003. After that, the

MERS-COV is another coronavirus that has been a constant global health threat since 2012. The disease was reported in South Korea due to an infected person traveling from the Middle East, where in 2015, 186 cases and 36 deaths were reported. As of November 2019, MERS-COV has infected 2944 people and killed 858 [22].

In December 2019, a new beta-coronavirus was temporarily renamed coronavirus 2019. It was later formally renamed as acute respiratory syndrome 2 (SARS-COV2) by the International Committee for the Classification of Viruses (ICTV). Coronavirus 2019 (COVID-19) was named SARS-COV-2 [24]. It is the seventh type of coronavirus that causes infection in humans after SARS-COV and MERS-COV and alike them is a beta subset of coronavirus [23]. On January 30, the WHO declared COVID-19 as an international emergency concern. nCOV-2019 is the third most dangerous pandemic virus that emerged in the 21st century. It is also one of the epidemic diseases [22].

In no time, scientists began researching the source of new coronavirus, and the first COVID-19 genome was extracted on January 10, 2020, by a research team led by Professor Zhang Zhang. The new virus spread across China within a month of the Chinese New Year. As of December 29, 2019, the first four cases of acute respiratory syndrome of unknown cause were reported in Wuhan, Hubei Province, China, among people associated with the local seafood market [20]. Most of the sufferers were at the exposure of wild animals offered at Wuhan Seafood Wholesale Market. Chickens, snakes, bats, and other domestic animals were also sold in this market. The scientists' findings showed that bats and minks may be two potential hosts for the new coronavirus, while bats were more similar to the new coronavirus in terms of infection pattern than mink. Thereafter, the China Center for Disease Control and Prevention surveyed seafood market products in southern China, concluding that the virus came from wild animals sold in the market. However, Lost's report on 41 infected patients challenged the finding that "no epidemiological link was found between the first patient and the next." The data showed that, in total, 13 of the 41 had no connection to the market. Person-to-person transmission of coronavirus was confirmed by Chan *et al.*, who reported that one person infected five members of the family [25]. The new coronavirus outbreak occurred during the Spring Festival in China, China's most famous traditional festival, with nearly 3 billion people attending across China. These conditions have brought about proper conditions for the transmission of this highly contagious disease and severe problems in the prevention and control of the epidemic. The city of Wuhan has been the epicenter of the disease with a population of about 10 million [24]. From December 31, 2020, to January 3, 2020, a total of 44 cases of this new respiratory disease were reported by Chinese authorities to the WHO. As of

July 22, 2020, 14,765,256 people have been infected worldwide and 612,054 people have died of the virus. Furthermore, in Iran, according to the WHO report, as of July 22, 2020, 278,827 people were infected and 14,634 people died due to the virus [26]. To date, the main source of infection has been patients with nCOV-2019. Respiratory droplets are the main way of transmission and can also be transmitted through close contact. Although many details, such as the source of the virus and its ability to spread among individuals, are yet unknown, an increasing number of cases indicate the transmission from human to human [27]. The researchers also detected SARS-COV2 in stool, saliva, and urine samples. Based on bioinformatics evidence, it was shown that the gastrointestinal tract could be a potential route for SARS-COV2 infection. In addition, SARS-COV2 was observed in the tear and conjunctival secretions of COVID-19 patients. Meanwhile, a retrospective study of 9 pregnant women with COVID-19 showed for the 1st time that the possibility of vertical intrauterine transmission between mothers and infants in late pregnancy was temporarily ruled out. However, research is not adequate and more research is needed in this regard [23]. The infection is transmitted through large droplets sent out by coughing and sneezing by symptomatic patients but may also be transmitted by asymptomatic individuals. These droplets can spread 1–2 m and remain on the surface. The virus can survive in suitable weather conditions for days but can be killed in less than a minute by common disinfectants such as sodium hydrochloride and hydrogen peroxide. The infection can be transmitted to a healthy person either by inhaling these droplets or touching the infected surface and then touching the nose, mouth, and eyes. Studies show that angiotensin 2 receptor acts as a receptor through which the virus enters the respiratory mucosa [28] (Table 1).

Symptoms

According to the current epidemiological study, the incubation period is generally from 3 days to 7 days and a maximum of 14 days. Unlike SARS-COV, nCOV-2019 is contagious during the commune period [27]. However, many different results have been reported on the incubation period of this disease. Coronavirus SARS-COV2 reproduces efficiently in the upper respiratory tract. Infected people produce a large amount of the virus in their upper respiratory tract during an introductory period, which leads to more spread of the virus to other people. Coronavirus SARS-COV2 also infects cells in the lower respiratory tract and multiplies in these organs, causing lesions in the lower respiratory tract. Infection with the new SARS-COV2 new coronavirus is initially associated with nonspecific and general symptoms such as

nausea, fatigue, and body aches, fever, and dry cough. Patients with pre-fever may initially have symptoms of nausea and diarrhea. A small number of patients may also have headaches or vomiting of blood. It may even be asymptomatic. Respiratory failure, septic shock, and extrapulmonary organ failure may also occur in severe cases [29]. In a study conducted by Chen *et al.*, 51% of patients with chronic disease and symptoms such as fever (83%), cough (82%), shortness of breath (31%), muscle pain (11%), fatigue (9%), headache (8%), sore throat (5%), rhinorrhea (4%), chest pain (2%), diarrhea (2%), and nausea and vomiting (1%) were reported [15]. Patients with cardiovascular disease, chronic disease, and people aged 60 and over, and men have a higher risk of mortality than the rest of the population. Next clinical findings is including: increasing the number of white blood cells, mostly neutrophils, with a decrease in lymphocytes, platelets and red blood cells. This new coronavirus infection causes more severe illnesses in the elderly, pregnant women, people with chronic debilitating diseases such as diabetes, cardiovascular disease, and malignancy [31].

Prevention and Control

Lack of specific clinical features, diagnostic microbiological challenge of the new coronavirus outbreak, together with seasonal flu, make difficult COVID-19 to diagnose. Furthermore, clinical signs such as high fever and respiratory symptoms are very similar to previous features of coronavirus. There is currently no specific antiviral treatment or vaccine for SARS-COV2, and clinical treatment of COVID-19 has so far been limited to prophylaxis and palliative care [22]. In the absence of appropriate treatment measurements to overcome the virus, the best ways to deal with are to prevent the spread of infection and control the sources of infection. All sections of society, including employees, employers, and workers, must be fully prepared to repel the coronavirus, even if the corona epidemic has not yet reached that country or region [32]. Prevention of this disease, if divided into two levels, individual and social, will be as follows:

Individual Prevention

1. Use personal protective equipment such as masks [33];
2. Do washing and disinfecting hands, especially after touching surfaces in public places;
3. Prevent the spread of respiratory droplets when coughing or sneezing with a mask and other protective equipment;
4. Avoid touching eyes, nose,

- and mouth;
5. Avoid attending in crowded places and close contact with people;
6. Disinfect the centers that are most exposed to touch [34];
7. Stay at home when you feel disease;
8. Abstain from smoking and any action that causes damage to the lungs;
9. Follow the government guidelines [35];
10. Do not share your personal items such as towels, bedding, either at home or at work [36];
11. Wash your personal items with soap and water after using [37];
12. Do not shake hands nor hug others when greeting in the workplace or home;
13. Avoid crowded public means of transportation and crowded centers such as hospitals, clinics, and any other public places;
14. Avoid physical contact with pets such as touching, petting, kissing, or eating together;
15. If animal care is necessary, wear a mask and wash your hands before and after touching pets;
16. Stay home for 14 days in case you are returning from areas with COVID-19 [36];
- and 17. Wearing a simple surgical mask by patients [33].

Social Prevention

1. Restrictions on travel, especially international travel;
2. Screening of people in offices when entering and controlling for signs [34];
3. Observance of the social distance of at least 2 m to reduce exposure and cut the transmission chain;
4. Cleaning and disinfecting infected surfaces and items in cities to eliminate and inactivate the virus [38];
5. Quarantine and movement restrictions in infected areas;
6. Early identification of infected people;
7. Provide appropriate care for patients;
8. Identify and reduce transmission from animal resources;
9. Minimize social and economic impact through multispectral partnerships [30];
10. School closures [41];
11. Use of appropriate equipment, including N95 masks and protective clothing and goggles by health care providers [22];
12. Preventing sick employees from entering the workplace;
13. Giving compulsory sick leave to sick or suspected employees;
14. Separating and isolating patients and suspects from other employees;
15. Establish proper ventilation systems in workplaces;
16. Use glass or plastic barrier between staff and clients or visitors;
17. Use of disposable tools and equipment;
18. Continuous training the employees regarding the observance of hygienic rules, handwashing, and how to use protective equipment;
19. Reducing staff working hours;
20. Reducing unnecessary missions and trips of employees; and
21. Restricting staff gatherings in sports and religious centers and holding remote meetings [32].

Quarantine alone is not enough to prevent the spread of COVID-19. A lot of countries have done controlling measurements, including a combination

Table 1: Research on epidemiology and prevention and control strategies of coronavirus COVID 19

Title	Authors	Year	Study selection	Samples	Results	Ref.
Unique epidemiological and clinical features of the emerging 2019 novel coronavirus pneumonia (COVID-19) implicate special control measures	Wang <i>et al.</i>	2020	Review	92 articles	Majority of infected individuals with no or mild symptoms can release viruses and spread viruses to others, which is extremely challenging for preventing the spread of COVID-19. Active interventions, including nutrition supplement, symptomatic treatment, and antiviral treatment are critical for mild patients as well as severe patients. Prophylactic vaccination is highly demanded for future prevention of emerging coronavirus related epidemics or pandemics	[19]
Epidemiology, causes, clinical manifestation and diagnosis, prevention and control of coronavirus disease (COVID-19) during the early outbreak period: A scoping review	Adhikari <i>et al.</i>	2020	Review	65 articles	This study shows a holistic picture of the current research in response to the outbreak of COVID-19. Most studies have focused on the epidemiology and potential causes. However, studies exploring prevention and control measures have begun to gradually increase. Studies in this domain are urgently needed to minimize the impact of the outbreak	[20]
Pandemic fear and COVID-19: Mental health burden and strategies	Ornell <i>et al.</i>	2020	Review	26 articles	It is extremely necessary to implement public mental health policies in conjunction with epidemic and pandemic response strategies before, during and after the event. Mental health professionals must be on the front line and play a leading role in emergency planning and management teams	[24]
2019 novel coronavirus (2019-nCoV) outbreak: A new challenge	Lupia <i>et al.</i>	2020	Review	225 articles	The new 2019-nCoV epidemic is mainly associated with respiratory disease and few extrapulmonary signs. However, there is a low rate of associated pre-existing respiratory comorbidities	[25]
A review of coronavirus disease-2019 (COVID-19)	Singhal	2020	Review	32 articles	Prevention entails home isolation of suspected cases and those with mild illnesses and strict infection control measures at hospitals that include contact and droplet precautions. The virus spreads faster than its two ancestors, the SARS-CoV and MERS-CoV, but has lower fatality	[26]
2019 novel coronavirus (COVID-19) outbreak: A review of the current literature	Sahin <i>et al.</i>	2020	Review	36 articles	Coronaviruses will cause spreads and outbreaks with different-mutant strains similarly in the coming years. With increased scientific collaboration, which is a result of globalization, we may have more powerful means of fighting against coronaviruses, in which we know the genome structure very well in the future	[27]
2019 novel coronavirus: Where we are and what we know	Cheng and Shan	2020	Review	32 articles	By fitting the number of infections with a single-term exponential model, we report that the infection is spreading at an exponential rate, with a doubling period of 1.8 days	[28]
A rapid advice guideline for the diagnosis and treatment of 2019 novel coronavirus (2019-nCoV) infected pneumonia	Jin <i>et al.</i>	2020	Review	38 articles	This rapid advice guideline is suitable for the first frontline doctors and nurses, managers of hospitals and healthcare sections, community residents, public health persons, relevant researchers, and all person who are interested in the 2019-nCoV	[29]
A review of the 2019 novel coronavirus (COVID-19) based on current evidence	Wang <i>et al.</i>	2020	Review	73 articles	This review in the hope of helping the public effectively recognize and deal with the 2019 novel coronavirus (SARS-CoV-2) and providing a reference for future studies	[30]
Novel coronavirus disease 2019 (COVID-19): An emerging infectious disease in the 21 st century	Tavakoli <i>et al.</i>	2020	Review	53 articles	The outbreak caused by the novel coronavirus is larger than the previous human coronaviruses; however, the mortality rate of COVID-19 is lower than that of other coronaviruses diseases such as SARS or MERS and other viruses. At present, due to the lack of an effective treatment and vaccine, the best way to deal with the COVID-19 disease is to prevent transmission and spread of the virus and to execute personal protective measures	[31]
COVID-19 and substance use disorders: Recommendations to a comprehensive healthcare response	Mokri <i>et al.</i>	2020	Review	128 articles	In this paper, an international group of experts on addiction medicine, infectious diseases, and disaster psychiatry explore the possible raised concerns in this issue and provide recommendations to manage the comorbidity of COVID-19 and substance use disorder (SUD)	[32]
Novel coronavirus 2019-nCoV: Prevalence, biological, and clinical characteristics comparison with SARS-CoV and MERS-CoV	Meo <i>et al.</i>	2020	Review	18 articles	The 2019-nCoV has epidemiological and biological characteristics, making it more contagious than SARS-CoV and MERS-CoV. Although the fatality rate of MERS-CoV was higher than them. The major clinical manifestations in coronavirus infections 2019-nCoV are fever, chills, cough, shortness of breath, generalized myalgia, malaise, drowsy, diarrhea, confusion, dyspnea, and pneumonia. Global health authorities should take immediate measures to prevent the outbreaks of such emerging and reemerging pathogens across the globe to minimize the disease burden locally and globally	[33]
Approaches for COVID-19 infection control in the workplace. Occupational Medicine. 2019	Rafeemanesh <i>et al.</i>	2019	Review	19 articles	All members of the society, including employers, employees and laborers, should be completely ready to overcome the virus, even if the epidemic has not been spreading in that country or area. This point can be effective on the reduction of lost workdays, work absenteeism, and prevent the spread of the virus in the community	[34]
Review on the symptoms, transmission, therapeutics options and control the spread of the disease of COVID-19	Irani	2020	Review	22 articles	The extensive functions have been carried out to reduce person-to-person transmission of COVID-19. In this review, the symptoms, epidemiology, transmission, pathogenesis, phylogenetic analysis, and future directions to control the spread of this fatal disease have been presented	[35]
A review of the new 21st century coronavirus (novel coronavirus-2019)	Ghaderi <i>et al.</i>	2020	Review	47 articles	Accordingly, it is considered a serious global threat and all necessary precautions should be taken in the event of any suspected case. Experiences from (MERS) and (SARS) highlight the importance of rapidly finding the source for 2019-nCoV to stem the ongoing outbreak	[36]
Coronavirus: Origins, signs, prevention, and management of patients	Hill	2020	Review	17 articles	It is important that, in these difficult times, nurses understand the symptoms of COVID-19, how to prevent its spread, and are up-to-date on the guidance on critical care	[37]
Coronavirus disease (COVID-19) outbreak and the strategy for Prevention	Sajed and Amgain	2020	Review	6 articles	Eradication of highly contagious SARS-CoV-2 virus that causing the ongoing deadly pandemic COVID-19 demands individual attention and awareness is necessary regarding the route and mode of transmission across the bounders throughout entire world. Proper handwashing, staying in-home, and maintaining the social distance are proved to be the most effective preventive measures which are immediate solution to save human being from this unseen enemy	[38]

(Contd...)

Table 1: (Continued)

Title	Authors	Year	Study selection	Samples	Results	Ref.
Modeling transmission and control of the COVID-19 pandemic in Australia	Chang <i>et al.</i>	2020	Review	58 articles	School closures are not found to bring decisive benefits unless coupled with high level of social distancing compliance. We report an important transition across the levels of social distancing compliance, in the range between 70% and 80% levels. This suggests that compliance of below 70% is unlikely to succeed for any duration of social distancing, while compliance at the 90% level is likely to control the disease within 13–14 weeks when coupled with effective case isolation and international travel restrictions	[39]
2019 novel coronavirus (COVID-19) pandemic: Built environment considerations to reduce transmission	Dietz <i>et al.</i>	2020	Review	96 articles	We hope this information can help to inform the decisions and infection control mechanisms that are implemented by corporate entities, federal, state, county, and city governments, universities, school districts, places of worship, prisons, health care facilities, assisted living organizations, daycares, homeowners, and other building owners and occupants to reduce the potential for transmission through BE-mediated pathways	[40]

of increasing hygienic acts, travel restrictions, case diagnosis, contact tracking, and remote activities. Their overall goal is to reduce the number of contacts of the population, thus preventing the transmission of infection [24]. While many common precautions are being taken to stop the spread of SARS-COV2, other less common transmission pathways should be considered and taken to reduce the spread [42]. The effectiveness of school closures is limited, although a 2-week delay in the peak of the epidemic does not have a significant effect on the peak size of the disease [41]. The greatest risk of COVID-19 is transmission to health care workers. At the outbreak of SARS in 2002, 21% of these people were affected by health care workers. Protecting the transmission of infection to other patients is important. Patients should be placed in separate rooms or next to each other. Negative pressure in rooms is generally not required [22].

Discussion

Research studies which assess the rate of COVID-19 interventions are limited and even if they are available, they either consider just one intervention, or they had been done in other fields of study. Therefore, the present study would be influential in dealing with disease by providing some major perspectives elicited from the collection of papers through investigating controlling, as well as personal and social preventive strategies.

Numerous features of the virus make it difficult to prevent, including non-specific features of the disease, infection even before the onset of symptoms during the incubation period, transmission from asymptomatic individuals, long incubation period, prolongation of the disease, and transmission even after its clinical improvement [26].

There is no single intervention to adequately control or reduce the epidemic of the disease. A combination of several influential measures such as keeping the social distance, doing several diagnostic

tests, and identifying positive cases would probably decrease the burden of the epidemic. However, it is essential to start synergic treatment earlier and continue appropriately. If following social distance and strict measures to diagnose the cases and tracking them start earlier but stops in <6 months, the disease burden and mortality rate would increase again, growing the demand for receiving hygienic care. While in doing early, invasive and long interventions, it would be easier to control the disease for a longer time. It seems that diagnosing marked patients, separating, intervening proceeding is the footstone of each successful controlling strategy [23].

Regarding recent findings, almost half of disease transmissions maybe before the symptom occurrence phase [43]. Therefore, keeping the social distant and keeping schools off to reduce personal contacts are logical and important ways. While dealing with an uncontrollable disease, hygienic systems of the countries with limited sources are significantly under pressure; thus, the morbidity and mortality rate would be 2 times of expected amount. If an uncontrollable disease is updating itself, even adding the number of hospital beds significantly does not work to decrease the mortality rate [23].

Several challenges have been posed by the COVID-19 epidemic, one of which is that the true extent of COVID-19 and the scale of its possible prevalence are not known precisely, and the actual number of infected and suspected patients is not identifiable [44].

Extension of corona resulted in a decrease of enormous economic and social offices all over the world. To decrease the financial loss resulted from the disease, as well as to support the small, stricken careers, most countries consider protective acts such as grants and tax reductions [45]. The propose theory is that it is possible that people are tired of following the long intervention; moreover, doing social distance can result in unwanted hygienic, economic, and welfare consequences, the subject that would probably affect strongly on a lot of countries who do not care on following the social security principles [46], [47].

The mortality and transmission rate of patients with COVID-19 vary in different findings [48].

On the other hand, more studies should be done on the following: How the virus is easily transmitted among people? How can it affect vulnerable subgroups such as the elderly or people with chronic diseases? What is the source of the virus? And how can it spread worldwide in such a short period of time [49]. Another challenge is whether nCOV-2019 disease is transmitted directly from bats or through an intermediate host. Wang *et al.* stated that one of the challenges is that “time is so limited that we cannot fully account for all the clinical problems with this emergency; second, much of the evidence from data retrieval is indirect” [5]. One of the existing problems is social media. In addition to sharing content quickly, social media also quickly spreads rumors, misunderstandings, and intimidation [20]. Only extensive research can be the key to solving the existing challenges and we hope that future studies will focus on the development of COVID-19 vaccines and effective drugs to treat them to reduce mortality.

Conclusion

According to studies and reports, the best way to overcome new corona disease is to prevent new cases and control the disease. Given the unknown characteristics of COVID-19, it is recommended that all organizations work to prevent and control the disease and break the transmission chain. To achieve this goal, the best solution is to educate the community, provide accurate information, provide sufficient personal protective equipment, allocate funds to fight the disease, abolish all communities, and emphasize on citizens staying home and washing their hands regularly, observe social distance, providing adequate diagnostic and treatment facilities, establishing fever measuring rooms in all stations, airports and public places, and finally identify suspected cases and quarantining.

The uncontrollable epidemic of COVID-19 has the potential to lead to a huge amount of death, strengthening with unanswered demand to hygienic measures. Results indicate that the best strategy is to control facing epidemic is a combination of interventions aiming at diagnose, reducing the contact, through some physical actions, and doing quarantine for infected people. Restricting the measures would prevent the extension of the epidemic, but if additional control measures would not be implemented, it would probably low in value.

It is essential that all managers, employers, and business owners be provided with the necessary information and training on prevention and control of COVID 19 disease based on health guidelines and protocols to reduce the number of

patients and prevent the spread of the disease in society.

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