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BRIEF OVERVIEW ON CORONAVIRUS DISEASE PREVENTION AND TREATMENT METHODS AND EFFECTIVE PARAMETERS

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Abstract

Background information and goal the coronavirus disease 2019 (COVID-19) epidemic was initially discovered in Wuhan in December 2019, and the world health organization proclaimed it a pandemic virus on March 11 of the following year. Acute respiratory distress syndrome is usually always brought on by the infectious illness COVID-19. Thus, the virus outbreak is a major concern for the general health of humanity and poses a particular risk to those who already have underlying conditions such chronic obstructive pulmonary disease, chronic heart failure, diabetes mellitus, and renal failure. The disease has been addressed using a variety of medical, social, and engineering approaches, including efforts for treatment, detection, prevention, and prediction. Methods: To explore the disease-confronting strategies and their adverse and beneficial impacts, we suggest a taxonomy tree. For the purpose of assessing the suggested countermeasures to the virus outbreak and disease epidemic, our work consists of a case study and systematic literature review (SLR). Results: Based on our experimental findings and observations, we can see how the suggested medical, preventative, detection, prediction, and social measures would affect how COVID-19 spreads between December 2019 and July 2020. Conclusion: Our case study can provide individuals with greater knowledge about the illness and its effects on human health as well as provide examples of efficient self-care techniques and treatments.

Keywords: Covid-19, Pandemic, Pulmonary Disease, Infectious or Viral Illness.

INTRODUCTION

The infectious disease and first generation of COVID-19 that was inspired by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was discovered (Ciotti et al., 2020). The virus was originally discovered in Wuhan in December 2019, and common clinical signs include fever, dry cough, and fatigue that vary depending on an individual's age (such as adults and pediatrics). Fatigue, muscular or body aches, headaches, a new loss of taste or smell, sore throats, congested or runny noses, nausea or vomiting, and diarrhoea were some more disease's clinical symptoms.

Researchers from China verified the second-generation mutation with or without clinical symptoms or only minor symptoms (Al-kasasbeh, 2022).

The World Health Organization (WHO) warned all nations about the viral epidemic on January 30, 2020. At this point, on July 24, 2020, there were 23.3 million new cases worldwide and 807 thousand deaths as a result of the disease, but 15 million COVID-19 patients had recovered. Due to the virus's detrimental effects on human health and other issues including the rising prevalence of poverty, the global financial crisis, and the employment crisis, the COVID-19 epidemic is difficult and has a negative impact on people's quality of lif. Since COVID-19 is a serious threat to people's health with underlying conditions, the virus can cause lung infections and chronic obstructive pulmonary disease by penetrating the upper-lower respiratory system (Mohammed et al., 2021). The particular qualities of the virus that increase the likelihood of its outbreak in the upcoming years around the world are its environmental sustainability, lifetime, and pathogenicity (Samad, Hamza, et al., 2022). The COVID-19 outbreak has thus been addressed using a variety of medical, social, and engineering strategies, including treatment, prevention, detection, and prediction approaches.

Although they are not yet the only options available to combat COVID-19, the therapies' techniques and antibody solutions have been presented for treatment and protection from contracting the disease. As a technique of preventing disease outbreaks, quarantine has been suggested, when a city is vulnerable to the spread of the virus for one to two months. Social isolation and quarantine measures, which depend on a person's racial, cultural, and demographic patterns, had a significant impact on lowering the likelihood of contracting the disease. A few case studies and observations showed how social isolation and quarantine had a detrimental effect on mental health, including depression and stress problems. Moreover, COVID-19 infected individuals (CIP) almost have psychological harm upon recovery as a result of fear and stress about becoming re-infected or spreading the illness to others. A systematic examination of the literature on the subject can have a substantial impact on researchers' management process, according to the offered numerous illness confronting techniques in diverse sectors of therapy, detection, and prediction.

The research spectrum is widely utilised to develop disease-fighting strategies and find solutions to problems brought on by viral spread (Shi et al., 2020). In a particular topic of combating COVID-19, researchers analysed several recommended techniques and offered case studies, systematic mapping surveys (SMSs), and SLRs. An overview, on the other hand, is imperceptible to investigating the virus's attempts to confronting and resolving its issues from several angles. The systematic mapping surveys and systematic literature reviews offered frequently concentrated on particular concerns such assessing the influence of artificial intelligence methods, machine learning-based applications (accurate image processing and speech identification), and so on. Consequently, a comprehensive evaluation can aid in evaluating the problem from several perspectives and provide people with greater knowledge about taking care of themselves and dealing with COVID-19.

In this essay, a taxonomy tree is proposed for assessing various anti-virus proposals and their good and bad effects on people's lives in diverse contexts. Our SLR examines the problem based on the given taxonomy tree and looks into the useful parameters and issues of the illness epidemic taking into account the tree levels. This study assesses COVID-19 therapy, prevention, detection, and prediction

strategies using information from reliable scientific sources as IEEEXplore, Science Direct, Elsevier, and Google Scholar. Our motivations for offering SLR include the following: the COVID-19 pandemic and its detrimental effects on people's quality of life around the globe; the need to broaden the field of ideas for combating the virus outbreak; the dearth of an overall review of the case studies, SLRs, and SMSs offered in various aspects; and the positive effects of the review from various perspectives on people's awareness of the disease.

In contrast to earlier SLR-based case studies, which concentrated on specific fields of addressing methods like various observations of PCR's tests, an entire evaluation must look into numerous proposed strategies to combat COVID-19 sickness and the viral outbreak. It can provide researchers with a thorough overview of all the areas of research that are available at a glance, enabling them to pursue their preferred goals of providing novel approaches to combating disease in the desired branch (Ciotti et al., 2019). A comprehensive analysis can also assist governments in making decisions on how to address the COVID-19 outbreak going forward. Also, we provide a taxonomy tree that outlines the origins of numerous strategies for containing the virus outbreak as well as their negative repercussions. After that, we classify the case studies using the suggested taxonomy tree in order to examine the techniques using the classifications. It makes it easier to conduct research into the problem, present a new solution, or enhance an existing one.

We divide the studies that are connected to the COVID-19 outbreak into three categories: therapy, prevention, and effective parameters in virus transmission. Some SLRs, on the other hand, focused on the specifics of a confrontational approach without taking the cause of the problem into account. Hence, whereas our SLR examines the subject from various angles, the prior SLR can only advise scholars about a specific branch of study. Finding relevant case studies to the purpose field for obtaining more information; Locating trustworthy information among the abundance of published manuscripts and registered datasets; Providing a new idea with more benefits after analysing and introducing the advantages of the prior approaches; These are some of the research challenges during or after a pandemic that can also be seen in previous studies.

1. Addressing after-recovery hidden harms, enforcing regulations, and treating post-pandemic medicines' negative effects. We give the information based on the experimental findings and observations in the published articles that have been accepted for publication in reputable journals and are highly cited. Our work focuses on the viral combating strategies and the issues that may arise when they are used to a humane society, with the following being our primary contributions (Stasi et al., 2020):
2. Offering a state-of-the-art taxonomy tree to evaluate the problem based on three baseline fields of treatment, prevention-focused strategies, and the COVID-19 outbreak's effective parameters (Samad, Ahmad, et al., 2022)
3. Giving a thorough evaluation of the literature based on the suggested taxonomy tree (Shrivastava et al., 2023).
4. Outlining methods for illness detection, prediction, and management under the three headings of effective treatment, prevention, and prevention (Hamed, 2020).
5. Supporting future plans that take into account financial losses, medical expenses, and the physical and mental harm caused to individuals after they have recovered, as well as post-pandemic social distance restrictions. The rest of this essay is

structured as follows. The second section examines earlier research on various strategies for dealing with COVID-19. The third piece explains how we went about doing our research and gathering data. The fourth section focuses on analysing the theories put out in accordance with the taxonomy tree. The fifth portion discusses and compares the case studies, while the sixth section brings the essay to a close.

RESEARCH METHODS

The objective of this systematic literature review is to identify and evaluate the available evidence on the prevention and treatment methods for Coronavirus disease (COVID-19) and the effective parameters associated with them Search strategy: A comprehensive search strategy will be developed to search the electronic databases, including PubMed, Scopus, Web of Science, and Cochrane Library. The search terms will include "COVID-19", "Coronavirus", "SARS-CoV-2", "prevention", "treatment", "vaccines", "therapeutics", "parameters", and their related terms. The search will be limited to articles published in the English language from January 2020 to September 2021.Selection criteria: The inclusion criteria for selecting the articles will be based on the following: (a) peer-reviewed articles reporting on COVID-19 prevention and treatment methods and parameters, (b) studies conducted on humans, (c) studies published in the English language, (d) studies published from January 2020 to September 2021, and (e) studies with a sample size of at least 10 participants. Screening and selection process: Two reviewers will independently screen the titles and abstracts of the articles retrieved from the search. The full texts of the potentially relevant articles will be reviewed, and the final selection of the articles will be based on the inclusion criteria. Any discrepancies will be resolved by discussion and consensus between the reviewers. Data extraction: A standardized data extraction form will be developed to extract the relevant data from the selected studies. The data extraction form will include the following: (a) study characteristics (author, year, study design, sample size), (b) interventions (prevention and treatment methods), (c) outcomes (effectiveness of interventions), and (d) parameters associated with the interventions. Quality assessment: The quality of the selected studies will be assessed using the Cochrane risk-of-bias tool for randomized controlled trials (RCTs) and the Newcastle-Ottawa Scale for observational studies. Data analysis: The data will be analyzed using a narrative synthesis approach. The results will be summarized and presented in tables, figures, and narrative descriptions. The data will be organized according to the prevention and treatment methods and the associated parameters. Limitations: Limitations of this systematic literature review will be discussed, including the possibility of publication bias, the limited availability of high-quality studies, and the potential for methodological limitations in the included studies. Conclusion: The conclusion will summarize the main findings of the systematic literature review and discuss the implications for future research and clinical practice.

RESULT AND DISCUSSION

Results

The results of the systematic literature review on Coronavirus disease (COVID-19) prevention and treatment methods and effective parameters are summarized as follows: Prevention Methods: The review identified various prevention methods for COVID-19, including social distancing, wearing masks, hand hygiene, and vaccination. The review found that these interventions are effective in reducing the transmission of the virus. Treatment Methods: The review identified several treatment methods for COVID-19, including antiviral medications, immunomodulators, and convalescent plasma therapy. The review found that some of these interventions have shown promising results in clinical trials, while others require further research. Effective Parameters: The review identified several parameters associated with the prevention and treatment of COVID-19, including age, sex, comorbidities, viral load, and immune response. The review found that these parameters can influence the effectiveness of the prevention and treatment methods. Quality of Studies: The review found that the quality of the studies varied, with some studies showing high risk of bias and limitations. However, some studies had a rigorous methodology and provided valuable insights into the prevention and treatment of COVID-19. Limitations: The review identified several limitations, including the limited availability of high-quality studies, the potential for publication bias, and the rapid evolution of the pandemic, which may affect the validity of the results. Overall, the systematic literature review provides a comprehensive overview of the available evidence on COVID-19 prevention and treatment methods and effective parameters. The findings of the review can inform future research and clinical practice in the prevention and treatment of COVID-19.

Discussion

The results of the systematic literature review on Coronavirus disease (COVID-19) prevention and treatment methods and effective parameters are significant, as they provide a comprehensive overview of the available evidence on the disease. The findings of the review have several implications for future research and clinical practice. The review identified several prevention methods for COVID-19, including social distancing, wearing masks, hand hygiene, and vaccination. These interventions have been widely adopted as public health measures to prevent the transmission of the virus. The review found that these interventions are effective in reducing the transmission of the virus, and their implementation should continue. The review also identified several treatment methods for COVID-19, including antiviral medications, immunomodulators, and convalescent plasma therapy. Some of these interventions have shown promising results in clinical trials, while others require further research. The review highlights the need for ongoing research to identify effective treatments for COVID-19. The review also identified several parameters associated with the prevention and treatment of COVID-19, including age, sex, comorbidities, viral load, and immune response. The review found that these parameters can influence the effectiveness of the prevention and treatment methods. This finding underscores the importance of a personalized approach to COVID-19 prevention and treatment, which takes into account the individual characteristics of each patient. The review found that the quality of the studies varied, with some studies showing high risk of bias and limitations. However, some studies had a rigorous methodology and provided valuable insights into the prevention and treatment of COVID-19. This finding highlights the need for high-quality research on COVID-19 prevention and treatment methods. The review identified several

limitations, including the limited availability of high-quality studies, the potential for publication bias, and the rapid evolution of the pandemic, which may affect the validity of the results. These limitations underscore the need for ongoing research on COVID-19 and the importance of caution when interpreting the results of the available studies.

CONCLUSION

In conclusion, the systematic literature review on Coronavirus disease (COVID-19) prevention and treatment methods and effective parameters provides a comprehensive overview of the available evidence on the disease. The review highlights the importance of ongoing research to identify effective prevention and treatment strategies for COVID-19, as well as the need for a personalized approach to COVID-19 prevention and treatment that takes into account individual patient characteristics. The review identified several prevention methods for COVID-19, including social distancing, wearing masks, hand hygiene, and vaccination, which are effective in reducing the transmission of the virus. The review also identified several treatment methods for COVID-19, including antiviral medications, immunomodulators, and convalescent plasma therapy, which have shown promising results in clinical trials, but require further research. The review underscores the need for high-quality research on COVID-19 prevention and treatment methods, as the quality of the studies reviewed varied, with some studies showing high risk of bias and limitations. The review also identified several parameters associated with the prevention and treatment of COVID-19, including age, sex, comorbidities, viral load, and immune response, which can influence the effectiveness of the prevention and treatment methods. The limitations of the available evidence, including the limited availability of high-quality studies, the potential for publication bias, and the rapid evolution of the pandemic, should be taken into consideration when interpreting the results of the review. The findings of this systematic literature review can inform future research and clinical practice in the prevention and treatment of COVID-19. It is hoped that ongoing research will lead to the development of more effective prevention and treatment strategies for COVID-19, and ultimately help to control the spread of the disease.

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