MINAR International Journal of Applied Sciences and Technology
ISSN: 2717-8234
Article type: Research Article

Received: 08/04/2022 **Accepted:** 02/05/2022 **Published:** 01/06/2022

INCIDENCE OF COVID 19 IN RELATION TO ENVIRONMENTAL TEMPERATURE AT AL- BASRA CITY, SOUTHERN OF IRAQ

Ali .F. HUSSEIN[1]
Southern Technical University, Iraq
Aalaa ABDULZAHRA[2]
Southern Technical University, Iraq
Nada. J. DAWOOD[3]
Southern Technical University, Iraq
Huda HAKIM[4]
Southern Technical University, Iraq

Abstract

Coronavirus has been first discovered in the 1960s and is known as 229E and OC43 [1]. After Covid-19 first appeared in Iraq on March 17, 2020. The beginning of the spread of this epidemic. We began studying the behavior of this virus and its relationship to the high weather temperature in Basra Governorate, southern Iraq, which is an important topic that has captured the attention of scientists and governments, especially since this virus showed a different behavior than scientists expected. As it recorded the highest infection with the virus during months July, August, and September, where the infection ranged from (334 - 583) and the temperature was recorded during this period. The months are between (45c– 52 ° C) this article, which was extended from 17/3/2020 – 28 /12/2021, So this study concluded that there a possible positive relationship between increasing of the infectivity of COVID-19 and high temperature. And at the same time its providing some recommendations to adequately control the similar future epidemic threats.

Keywords: Cov19-CoV-2, High Temperature Environmental, Infection.

http://dx.doi.org/10.47832/2717-8234.11.12

1 a.faisal@stu.edu.iq
2 aala.abdulzahra@stu.edu.iq
3 n.alkamil@stu.edu.iq
4 hhakim@ stu.edu.iq

Introduction

In recent years, emerging infectious illnesses, such as infections caused by coronaviruses, have posed a global danger to public health, SARS (severe acute respiratory syndrome) and MERS (middle east respiratory syndrome) are two coronavirus infections that have been shown to cause large epidemics. [2]. MERS, in particular, has posed a serious concern in the middle East since its discovery in Saudi Arabia in 2012. SARS-CoV-2 is a zoonotic *Beta coronavirus* that most likely started in bats and is now spread among people. This is the first coronavirus pandemic to pose a worldwide threat. SARS coronavirus-2 (SARS-CoV-2) was discovered in late December 2019 in Wuhan, China. A cluster of patients with pneumonia of unknown origin were reported and presented with a common link in a seafood wholesale market (fish market with live animals of many species, including wildlife) in Wuhan (Hubei, China), and the etiologic agent was swiftly identified as a new coronavirus[3,4]. SARS-CoV- 2 was the name given to it afterwards, causes Coronavirus disease-2019 (COVID-19) is an acute respiratory disease caused by a high pathogenic coronavirus that was recently introduced into the human population. The coronavirus SARS-CoV-2 is the sixth coronavirusto infect humans. In less than a decade, SARS-CoV-2 emerged as a human coronavirus, after the development of MERS-CoV. The recent emergence in China of a hitherto unknown coronavirus has had massive worldwide consequences. The SARS-CoV-2 pandemic, as well as the later COVID-19 pandemic, had devastating health and economic consequences for humans[5]. SARS-CoV-2 has been linked to more than twelve million reported and confirmed cases, as well as more than 500 thousand deaths, in 216 countries throughout the world, with more than three million cases documented in the United States as of July 9, 2020[6,7].The new Corona virus (Coronavirus, Respiratory Syndrome, appeared in Wuhan, China, in December 2019 and spread rapidly around the world, as the World Health Organization officially described it as a pandemic on March 11, 2020. As of 3/17/2020, the number of infections in Iraq began to increase, specifically in Basra, studies have proven that high temperatures reduce infection and kill the virus, while we have reached, through research and comparison with temperatures, opposite of what was mentioned above In Basra Governorate, temperatures reach 53 ° C, and the virus. Was not affected by heat

Seasonal patterns in infectious diseases remain to this day somewhat poorly understood phenomenon, with many potential factors. Some are related to the pathogen, some are related to the virus host, and some are closely related to the environment. Moreover, this is especially true in the first months of the Epidemic, where weather or seasonality can be observed compared to the number of infections through our research that we rely in it on atmospheric temperature as a simple and readily available alternative to seasonal variations. The Coruna virus is one of the viruses that contain an envelope and this coat is oily, and this type of virus is affected by high or low temperature [8]. through our research we figured to that the infection increased significantly despite the increase in temperature especially since it is stilla new virus and temperature rise on its own it will not eliminate Covid 19 if the full precautions and preventive measures do not continue and unless awareness of the importance of social distancing, non-mixing and adherence to the guidelines of the World Health Organization ,this viruses can be tolerate temperatures differently ,as it enveloped and surrounded by a lipid envelope is significantly Affected by high or low temperatures and is easy to destroy or growth compared to viruses that are not covered with a lipid coating. This effect terminates their activity and temperature ability to transmit infection when exposed to temperatures ranging from 50 to 60 degrees Celsius for half an hour and Some viruses do not apply this rule such as the virus that causes hepatitis, and according to what has beenmentioned spread of Corona virus decreases with a gradual rise Temperature [9]. However, this is not certain although corona is an infectious disease that will have a transmission that is not dependent on temperature, our research indicates

that it may also have a seasonal component that is affected by temperatures and the effect of temperature on the rate of transmission is changed through social interventions such as spacing, as well as time spent indoors and other factors that it can determines the speed of the spread of the COV 19 [10]. Likewise, weather conditions (high or low temperatures) affect the spread of the Corona virus, but it does not eliminate it completely We began to research the potential impact of atmospheric temperature, which is one of the suspected factors affecting the spread of Covid- 19 and the development of the pandemic. We performed an innovative correlation analysis between temperature and the number of daily infections for an entire year since spread of disease, in order to study potential relationship between atmospheric temperature and development of disease.

Material of Method

The data were obtained for the daily epidemiological situation from official website of Basra Health Department, the statistics were obtained through collect them in a charts using excel system and display them in manuscript that shown in results.

Result and discussion

Iraq, and some Arab countries mainly received COVID-19 from people who were in the Islamic Republic of Iran. And the disease began to spread in several other countries after China Soon after the outbreak of the disease in Wuhan. However, As Iran recorded the highest infections with this virus after China, the reports issued by the World Health Organization were not mentioned fortunately, and none of the mentioned Arab countries has yet been mentioned. The summits witnessed, as did Iran [11]. Through our study, we reached an assessment of the levels of decline and rise in infections with this epidemic, COVID-19 Relying on temperatures during eleventh months, our study extended from (March to December 2020) during which virus activity was recorded by comparing it with the number of infections and temperatures, And based on the epidemiological position of the IraqiMinistry of Health, the highest rate of infection with this epidemic was recorded in Basra Governorate last August, with 583 cases of the virus. At a temperature of 45 °C as shown in Fig (1). While In September, 496 injuries were recorded at a temperature of 46 °C . This was followed by 334 infections in July, while the temperature was recorded at 52 ° C. The number of injuries was 295 in October at a temperature of 40 ° C. And through the daily epidemiological position issued by the Ministry of Public Health, the percentage of infections with the covid 19 decreased, which is one infection During the summer months (March, April and June) , and this decrease coincided with the decrease in the weather temperature, which ranged (23-29° C),which ranged between (23-29 ° C), which is the lowest recorded temperature compared to the nature of the atmosphere in the city of Basra, southern Iraq.as in the figures (2,3,4). In the May, 6 infections were recorded at a temperature of 33 ° C, as shown in the fig (5). Through our study, we noticed that there was a decrease in the number of people infected with this virus to 78 infected in the month of December at a temperature of 17 °C figures (6). And with these results and statistics we obtained that the Corona virus increases its effectiveness by increasing the temperature and increases the chances of its rapid spread among society. The activity of this virus weakens and its spread among the community decreases when temperatures drop, especially in winter.

Conclusion

Through our study, we were able to conclude that the number of injuries is increasing In Basra Governorate, southern Iraq, and where injuries were recorded in large numbers, despite the high temperature, which reaches 52 degrees Celsius. However, the situation it has deteriorated for several months from 2020. However, these numbers could increase in the future, the challenges facing the health sector in Iraq have been identified here, and more work is needed by the government, as well as to include epidemic and infection

control. Weas researchers have taken a role in proving that Covid 19 is not affected by high temperature and there is a need for more Efforts to overcome this epidemic by educating the visual community about the dangers of Covid 19 and this epidemic is dangerous at all times and it isnot possible to specify a specific time for the activity of this virus.

Recommendations:

(A) Periodically chewing and disinfecting surfaces, especially those touched frequently

(B) Cover your mouth and nose by bending the elbow or a tissue when coughing or sneezing

(C) Avoid contact with eyes, nose and mouth

(D) Regularly clean your hands with an alcohol-based hand sanitizer or wash them with soapand water.

(E) If you have a fever, cough, and trouble breathing, seek medical attention right away. Callthe phone first if you can

(F) Stay home and quarantine yourself even if you have mild symptoms such as coughing,headache and low fever.

Figure (1): shows that the highest incidence of infection with Covid 19 is due to the temperature, on August 21, 2020, the highest infection level was with Covid 19 (583) while the temperature was 45c °.

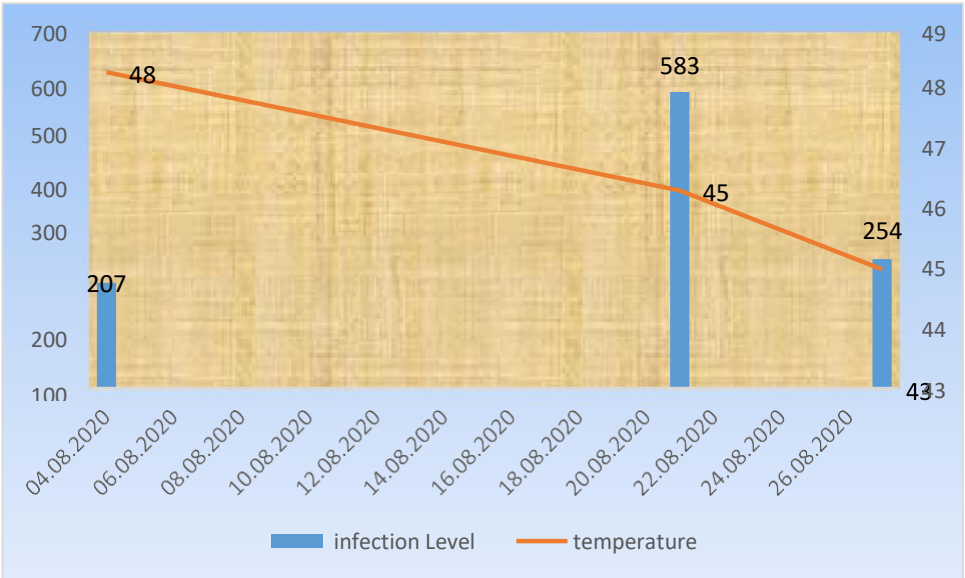


Figure 2: shows that the lowest Incidence of infection during the month On March 23, 2020, the lowest level of infection was with Covid 19was 1 while the temperature was 23c°.

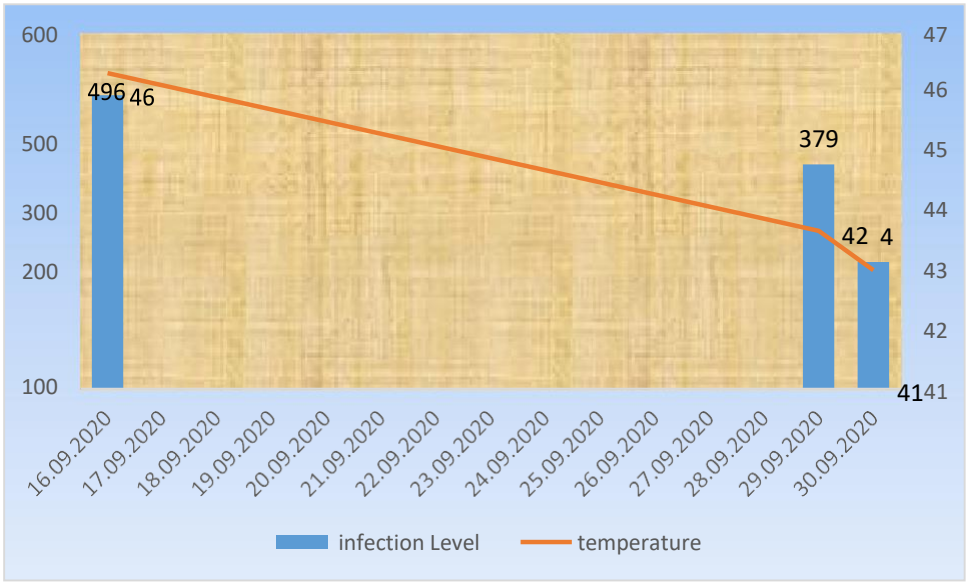


Figure 3: shows that the lowest Incidence of infection during the month On April 29, 2020, the lowest level of infection was with Covid 19 was 1, while the temperature was 28c°.

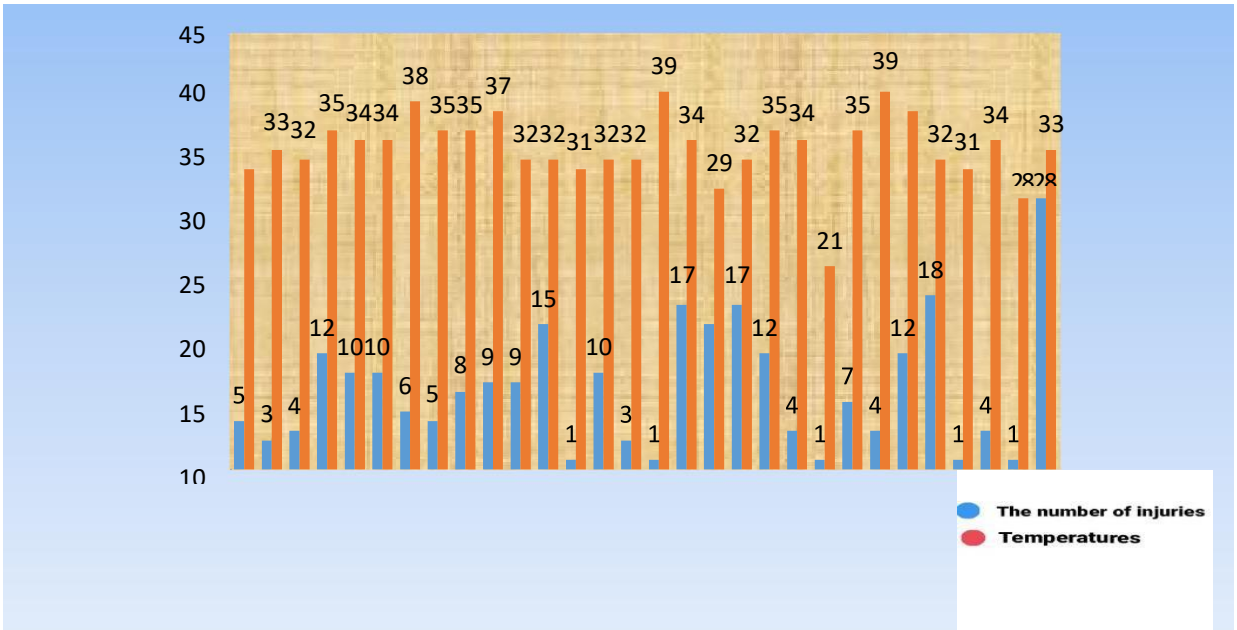


Figure 4: Shows that the lowest Incidence of infection during the month On June 29, 2020, the lowest level of infection was with Covid 19 (1) while the temperature was 29 ° C.

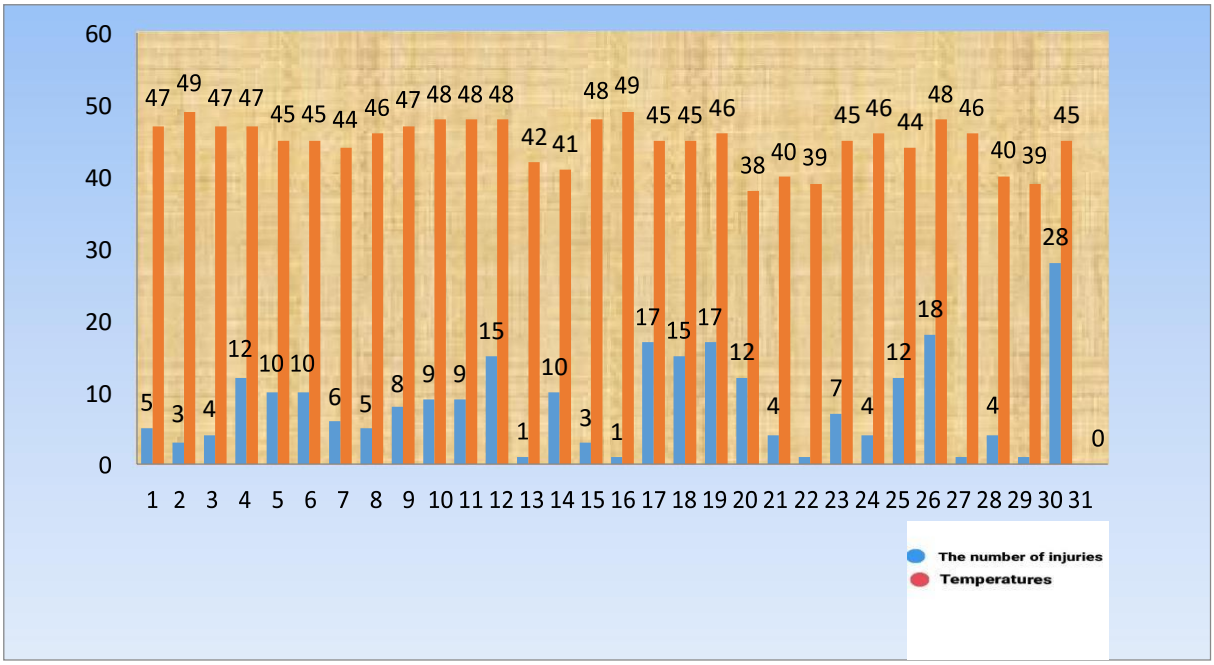


Figure 5: Shows that the lowest Incidence of infection during the month: On May 23, 2020,the lowest level of infection was with Covid 19 (6) while the temperature was 31C °.

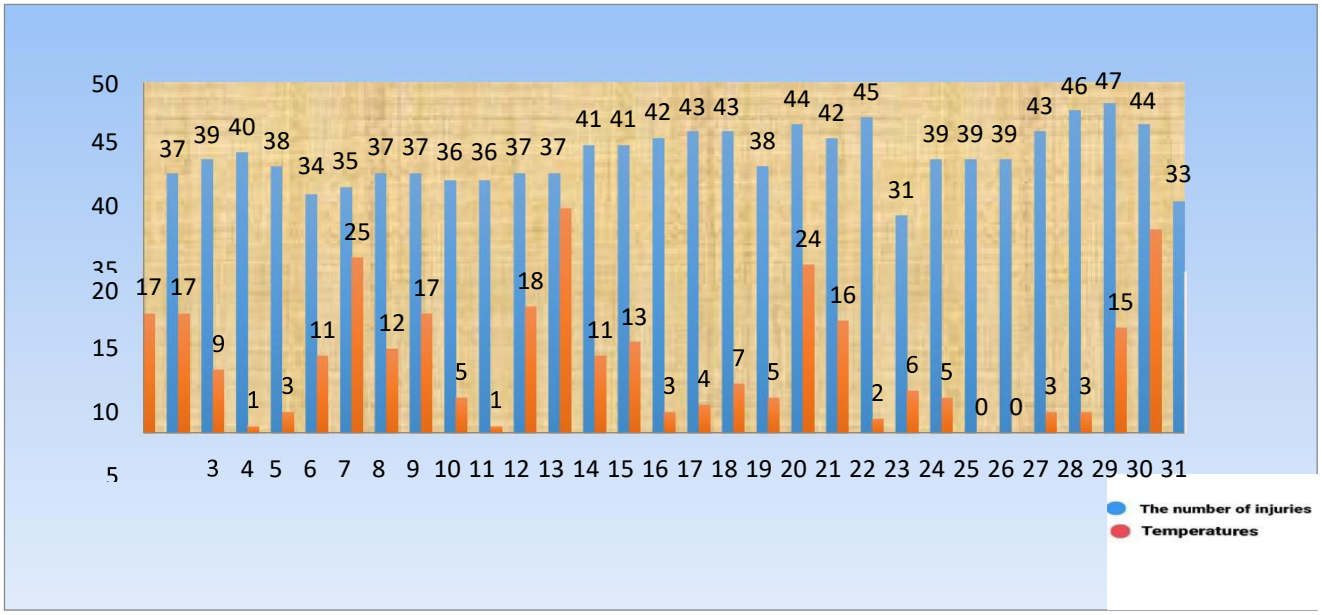
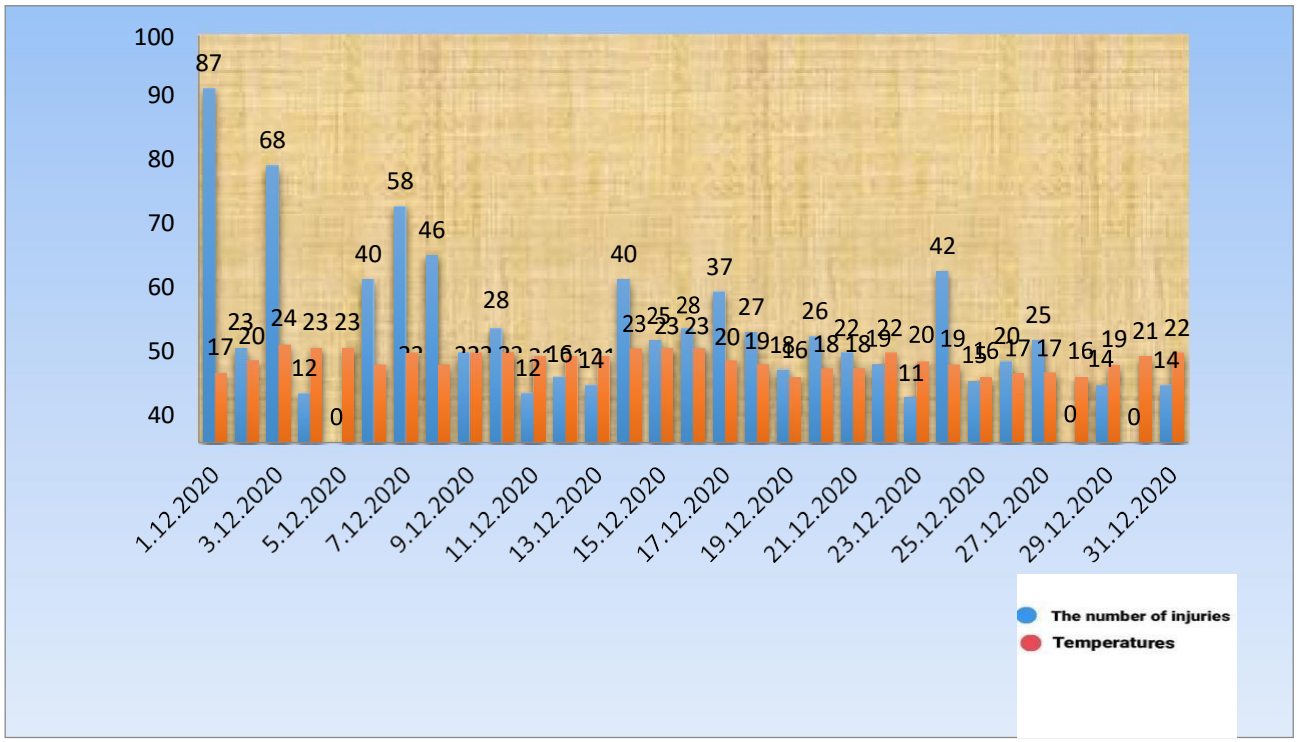


Figure 6: shows that the lowest Incidence of infection during the month: On December 1, 2020, the highest infection level was with Covid 19 (87) while the temperature was 17 ° C.



References

1- Kah.J. S and McIntosh K., 2005 "History and recent advances in coronavirus discovery." Pediatr. Infect. Dis. J., vol. 24, no. 11 Suppl, p. S223–7, discussion S226}.

2- Abdirizak F, Lewis R, Chowell G. Evaluating the potential impact of targeted vaccination strategies against severe acute respiratory syndrome coronavirus (SARS-CoV) and Middle East respiratory syndrome coronavirus (MERS-CoV) outbreaks in the healthcare setting.

Theor Biol Med Modell. 2019;16 (1):16

3- Zhu N, Zhang D, Wang W, et al. A novel coronavirus from patients with pneumonia in China, 2019. N Engl J Med. 2020; 382(8):727–6.

4- Liu W, Zhang Q, Chen J, et al. Detection of Covid-19 in children in early January 2020 inWuhan, China1. N Engl J Med. 2020;382 (14):1370–1371.

5- Gorbalenya A, Baker S, Baric R et al. The species severe acute respiratory syndrome-related coronavirus: classifying 2019-nCoV and naming it SARS-CoV-2. Nat Microbiol. 2020;536–544 (2020).

6- Coronavirus COVID-19 Global Cases by Johns Hopkins, The Center for Systems Science and Engineering (CSSE); 2020.

7- Dong E, Du H, Gardner L. An interactive web-based dashboard to track COVID-19in real time. Lancet Infect Dis. 2020; 20(5):533–534.

8_ Pranzo, A. M. R., Dai Prà, E., & Besana, A. (2022). Epidemiological geography at work: An exploratory review about the overall findings of spatial analysis applied to the study of CoViD-19 propagation along the first pandemic year. *Geojournal*, 1-23.

9_ Wang, X., Sun, S., Zhang, B., & Han, J. (2021). Solar heating to inactivate thermal-sensitive pathogenic microorganisms in vehicles: application to COVID-19. Environmental Chemistry Letters, 19(2), 1765-1772.

10_ Habeebullah, T. M., Abd El-Rahim, I. H., & Morsy, E. A. (2021). Impact of outdoor and indoor meteorological conditions on the COVID-19 transmission in the western region of Saudi Arabia. *Journal of environmental management*, *288*, 112392.

11- Lauer S., Grantz K., Bi Q., Jones F., Zheng Q., Meredith.H, Azman.A, Reich.N,and Lessler J.,2020 "The Incubation Period of Coronavirus Disease 2019 (COVID-19) From Publicly Reported Confirmed Cases: Estimation and Application," Ann. Intern. Med

12_. World Health Organization, Regional Office for the Eastern Mediterranean. Content retrieved on 1/3/2020 and compiled from the following website: http://www.emro.who.int/en/health topics/corona-virus/information-resources.html CC BY-NC-SA 3.0 .IGO: Under License