Increased Risk of Hepatitis A due to Weather Changes: A Review

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Abstract. The existence of climate change gives great concern to public health problems. In a review, this carried out observations on the article discusses the impact of climate change on the increase in cases of hepatitis A disease. Materials and Methods: Keyword "Hepatitis A", "Handling of patients and prevention", "Hepatitis A due to climate change" is used through a combination of "OR" and "AND" to perform electronic search in Google and Google Scholar and PubMed. The search was conducted with a publication year limitation between January 2012 and October 2020. Results: 6 articles were collected and met the inclusion criteria. The literature review shows that most of the research has been done in countries advanced, and is found in the article mentioned that the cases of hepatitis A increases with extreme climate change in each country.

1. Introduction
Hepatitis A is a disease caused by the hepatitis A virus (HAV). Transmitted through the oral route, the mode of transmission can be through the direct route (person to person) and indirect route (feces, contaminated food or water) this disease can be said to be able to heal by itself [1].
Changes in the climate globally is estimated will affect the frequency, intensity and duration of the incidence of weather related water extremes such as excessive rainfall, waves of storms, floods, and droughts [2].
Some journals seem to take a hypothesis that there is an increased risk of hepatitis A due to climate change, namely those related to water (rain, floods, storms, and snow).

2. Method
2.1 Strategy search
Search electronics in Google and Google Scholar and PubMed as the source of a major, in access in November 2020 for extracting the study were at issue in the languages English which discusses cases of incidence of Hepatitis A in patients caused by climate change. Search strategies were in use to search for articles by keyword "hepatitis A", "treatment and prevention of hepatitis patients" "Hepatitis A due to climate change" was developed through a combination of "OR" and "AND". We observe the articles of research that in published between 2012 until 2020. The title, abstark and
said key screened for tep early in the article that is relevant and meets the criteria for inclusion were included in the analysis.

### 2.2 Inclusion Criteria

1. Articles that discuss or evaluate a disease that is caused by climate change.
2. *Articles discuss and feed that information about the incidence of the disease hepatitis A were published in the period of time January 2012 until October 2020*

### 3. Result

#### 3.1 Literature search

Search initial identify of the 22 articles were collected from google and google scholar and PubMed. Among the articles that, 16 articles in spend because no mem ili correlation, while six articles entered and meet the criteria of inclusion. Research studies take place in (Spain, India, China, Turkey, Iran)

| Author                  | Area and Research | collection of data | Statistical Methods | Main Findings                                                                                                                                                                                                 |
|-------------------------|-------------------|--------------------|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Pedro Gullon, Carmen Varela, Elena Vaneesa, Diana Gomez Barroso | Spanish           | Climate Factors    | Hepatitis A         | Epidemiological Studies The main finding was that there was an increased risk of hepatitis A cases 2 weeks after a water-related climate change event                                                              |
| S. Pal, Juyal, Sharma, Kotian, Negi                           | India             | Extreme Rain       | Hepatitis A disease | Study Area, Blood Sample, Serology and water analysis The main finding was made that it is difficult to overcome such problems especially as India is a developing country that is short of resources, but must deal with extreme situations such as very drastic weather changes. Post-disaster outbreak prevention must be formed with careful initial planning and disaster management. |
|                       | Iran              | Climate change     | Rotavirus and Hepatitis A | Field Study 1. Rotavirus and hepatitis A virus are detected in water resulting in gastroenteritis and hepatitis A 2. Climate change has shown a significant increase in the incidence of Hepatitis A |
| Lu Gao, Ying Zhang, Guoyong Ding, Qiyong Liu                  | China             | Climate Change / Flood Events | Hepatitis A         | Poisson Regression Model The published findings show that there will be an increase in the incidence of Hepatitis A infection caused by climate change                                                                                            |
climate change in the form of floods in Anhui, China.

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4. Discussion

Impact of Climate Change on the incidence of Hepatitis

Hepatitis A is a disease that will increase significantly during climate change, especially those related to water, such as continuous rain which causes flooding, and others. The impact of extreme weather changes on water will result in changes in the water population such as the duration of the hepatitis A virus in the water which can affect certain populations and will contribute to public health.

This journal describes the greatest potential for those who will experience hepatitis A, namely those in areas or populations with water-related climate change and areas prone to flooding. According to Semenza, explained that the change of climate globally is estimated will affect the frequency, intensity and duration of the incidence of weather-related water extremes such as excessive rainfall rain, waves of storms, floods, and droughts.

All articles reviewed indicated an increase in cases of Hepatitis A due to extreme climate change. Research shows that there is a significant relationship between hepatitis A and weather changes, especially increased rainfall and floods in several areas. Prevention that is included in tackling the increase in hepatitis A cases is carried out through disaster mitigation, namely forming a special team that is asked to carry out initial disaster planning and preparedness for dealing with post-disaster cases such as a spike in cases of patients with hepatitis A.

It's important for those at-risk groups to determine preventive measures and treatment can be done if they had hepatitis. In addition to discussing the risk of increasing cases of hepatitis with climate change, this study also presents the risk of climate change and liver damage due to hot weather. This journal has been very good at explaining some of the consequences caused by weather changes in various countries as well as the management methods which are not much different.

5. Conclusion

Concerns related to the increase in cases of Hepatitis A cannot be ignored since the consequences of climate change are very serious, but the risks can be eliminated by properly planning and mitigating disasters. Climate change does not only provide an increase in cases of hepatitis but also has a negative impact on hepatitis sufferers because one of the studies conducted explained that there was damage to several day functions during the summer in patients with hepatitis disease.

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